Air Quality Report

SR-241/SR-91 Express Lanes Connector Project

Cities of Anaheim, Yorba Linda, and Corona

Counties of Orange and Riverside

California Department of Transportation, District 12

EA No. 12-0K9700

Project No. 1200020097

FTIP Project ID: ORA111207

July 2015

Caltrans

CALIFORNIA DEPARTMENT OF TRANSPORTATION

This page intentionally left blank

Air Quality Report

SR-241/SR-91 Express Lanes Connector Project

Cities of Anaheim, Yorba Linda, and Corona

Counties of Orange and Riverside

California Department of Transportation, District 12

EA No. 12-0K9700

Project No. 1200020097

FTIP Project ID: ORA111207

July 2015

Prepared By: _____ Date: July 9, 2015

Keith Lay
Associate, Acoustical and Air Quality Services
(949) 553-0666
LSA Associates, Inc.

Approved By: _____ Date: 7/23/2015

Reza Aurasteh, Ph.D., Branch Chief
Environmental Engineering Branch
California Department of Transportation
District 12

This page intentionally left blank

Executive Summary

The California Department of Transportation (Caltrans), in cooperation with the Foothill/Eastern Transportation Corridor Agency (F/ETCA) proposes to construct a median-to-median connector between State Route 241 (SR-241) and the State Route 91 (SR-91) Express Lanes. SR-241 is a tolled facility, starting at the Oso Parkway interchange, in south Orange County, to its terminus at SR-91. The SR-91 Express Lanes is a two-lane tolled facility located within the median of SR-91, from State Route 55 (SR-55), to the Orange/Riverside County line (east of the SR-241 interchange). Currently, there is no direct connection between the SR-241 toll lanes and the SR-91 Express Lanes.

This air quality analysis provides a discussion of the Proposed Project, the physical setting of the Project Area, and the regulatory framework for air quality. The analysis provides data on existing air quality and evaluates potential air quality impacts associated with the Proposed Project.

Historical air quality data show that existing carbon monoxide (CO) levels for the Project Area and the general vicinity do not exceed either the State or federal ambient air quality standards. The Proposed Project is located in an attainment/maintenance area for federal CO standards. Using the Caltrans Transportation Project-Level Carbon Monoxide Protocol, a screening and a CO hot-spot analysis were conducted to determine whether the Proposed Project would result in any CO hot spots. It was determined that the Proposed Project would not result in any exceedances of the 1-hour or 8-hour CO standards.

The Proposed Project is within a nonattainment area for federal $PM_{2.5}$ and within an attainment/maintenance area for federal PM_{10} (particulate matter less than 2.5 microns and 10 microns, respectively, in size) standards. Therefore, per 40 Code of Federal Regulations, Part 93, analyses are required for conformity purposes. However, the United States Environmental Protection Agency does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as an air quality concern. Therefore, a $PM_{2.5}/PM_{10}$ hot-spot analysis was submitted to the Transportation Conformity Working Group (TCWG) for its review. On April 28, 2015, the TCWG determined that the Proposed Project is not a project of air quality concern.

Compliance with South Coast Air Quality Management District Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions.

Because the Proposed Project does not generate new regional vehicular trips, no new regional vehicular emissions would occur. The Proposed Project may have a beneficial effect in helping to reduce congestion on roadway links in the Proposed Project vicinity.

The Proposed Project is required to include an analysis of Mobile Source Air Toxics (MSAT) as part of the National Environmental Policy Act (NEPA) process for highways. It is expected that there would be similar or lower MSAT emissions in the Project Area under the Build Alternative relative to the No Build Alternative in the design year (2040) due to the reduction in average delay per vehicle within the Project Area.

The *Traffic Analysis Report* (June 2015), determined that the Proposed Project would increase the average vehicle speeds in the Project Area by 2–4 miles per hour (mph) and would decrease the average delay per vehicle by up to 20 percent. In addition, as shown in Tables 5.2 and 5.3, the largest increase in daily trips would be 7,800 in 2017 and 3,400 in 2040.

The Proposed Project is located in the Counties of Orange and Riverside, which are not among the counties listed as containing serpentine and ultramafic rock. Therefore, the impact from naturally occurring asbestos during project construction would be minimal to none.

The Proposed Project was determined to be in regional conformity. The Proposed Project is in the 2012 Regional Transportation Plan (RTP), which was found to be conforming by the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) on June 4, 2012. The Proposed Project is also in the 2015 Federal Transportation Improvement Program (FTIP), which was found to be conforming by the FHWA/FTA on December 15, 2014 (Project ID: ORA111207; HOV/HOT Connector: NB SR-241 to EB SR-91, WB SR-91 to SB SR-241 [1 Lane each dir]). The Build Alternative is consistent with the scope of the design concept of the FTIP. Therefore, the Proposed Project is in conformance with the State Implementation Plan, and thus, the Proposed Project was determined to be in local conformity.

TABLE OF CONTENTS

LIST OF FIGURES

This page intentionally left blank

LIST OF TABLES

This page intentionally left blank

LIST OF ABBREVIATED TERMS

$\mu g/m^3$	micrograms per cubic meter
°F	degrees Fahrenheit
AADT	annual average daily traffic
ac	acres
ADT	average daily traffic
AB	Assembly Bill
ACMs	asbestos-containing materials
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	best available control measures
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standard
Cal/EPA	California Environmental Protection Agency
CALINE4	California Line Source Dispersion Model, Version 4
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
CIP	Corridor Improvement Program
City	Cities of Anaheim, Yorba Linda, and Corona
CO	carbon monoxide
CO_2	carbon dioxide
CO-CAT	Coastal Ocean Climate Action Team
Diesel PM	diesel particulate matter plus diesel exhaust organic gases
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency

ETC	Eastern Transportation Corridor
F/ETCA	Foothill/Eastern Transportation Corridor Agency
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GHG	greenhouse gas
HFC	hydrofluorocarbon
HFC-134a	1,1,1,2-tetrafluoroethane
HFC-152a	difluoroethane
HFC-23	fluoroform
HOT	high-occupancy toll
HOV	high-occupancy vehicle
IPCC	Intergovernmental Panel on Climate Change
LED	light-emitting diode
lbs/day	pounds per day
LOS	level of service
max	maximum
mi	miles
mph	miles per hour
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
N_2O	nitrous oxide
N/A	Not Available
NAAQS	national ambient air quality standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
O_3	ozone
OMB	Office of Management & Budget
OPR	Office of Planning and Research

PM	particulate matter
PM_{10}	particulate matter less than 10 microns in size
$PM_{2.5}$	particulate matter less than 2.5 microns in size
POAQC	project of air quality concern
ppm	parts per million
Protocol	Transportation Project-Level Carbon Monoxide Protocol
ROGs	reactive organic gases
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SIP	State Implementation Plan
SO_2	sulfur dioxide
SR-133	State Route 133
SR-241	State Route 241
SR-91	State Route 91
SMC	Systems Management Concept
TCWG	Transportation Conformity Working Group
USC	United States Code
USDOT	United States Department of Transportation
UV	ultraviolet
VMT	vehicle miles traveled
VOCs	volatile organic compounds

This page intentionally left blank

Chapter 1 Project Description

1.1 Introduction

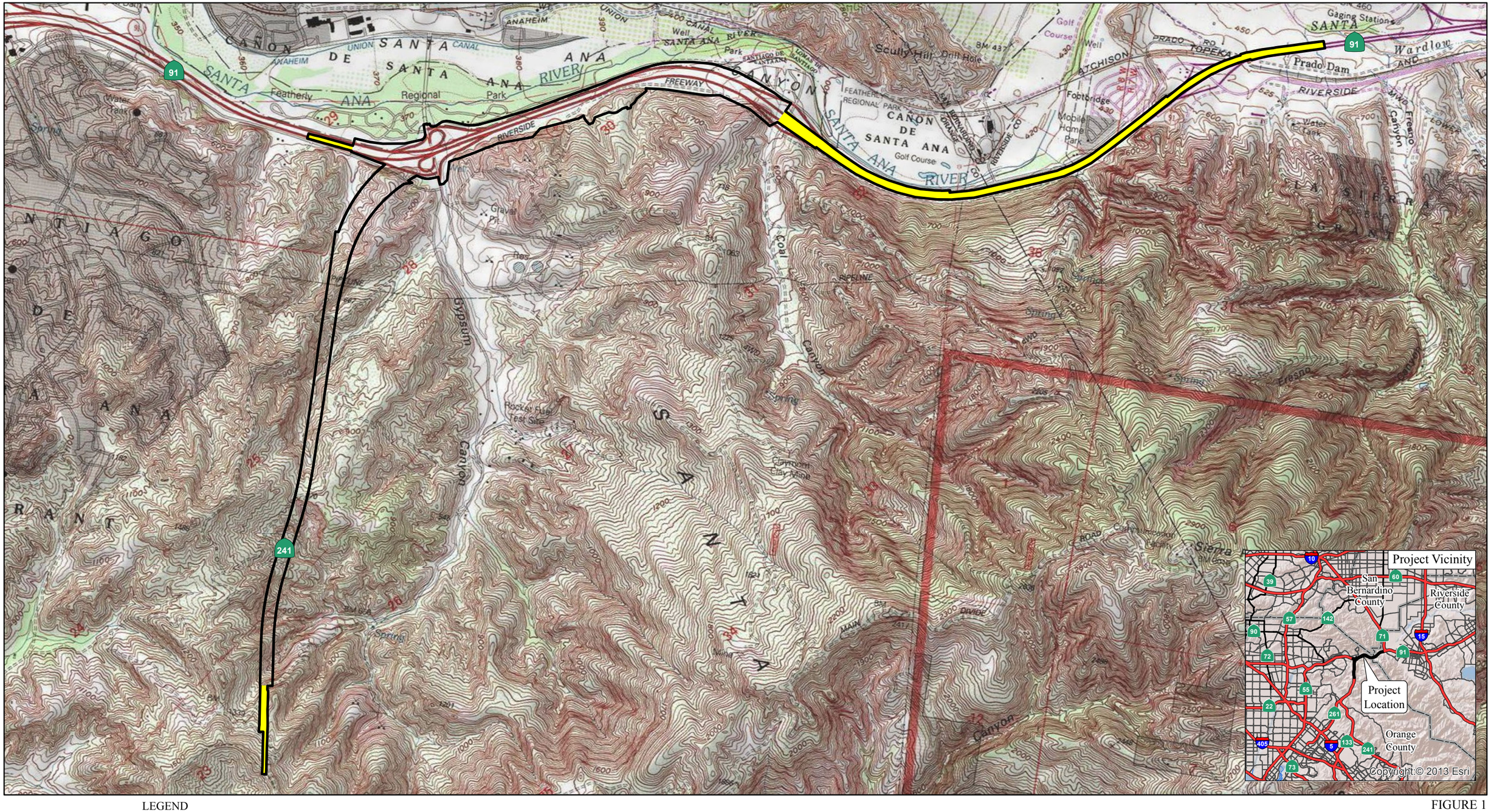
The California Department of Transportation (Caltrans) District 12, in cooperation with the Foothill/Eastern Transportation Corridor Agency (F/ETCA) proposes the State Route 241 (SR-241)/State Route 91 (SR-91) Express Lanes Connector Project (Proposed Project) to construct a median-to-median connector between SR-241 and the tolled lanes in the median of SR-91 (SR-91 Express Lanes). SR-241 is a tolled facility, starting at the Oso Parkway interchange, in south Orange County, to its terminus at SR-91. The SR-91 Express Lanes is a two-lane tolled facility, in each direction, located within the median of SR-91, from State Route 55 (SR-55), to the Orange/Riverside County line (east of the SR-241 interchange). The existing interchange connects all lanes of the northbound and southbound SR-241 to non-tolled, general purpose lanes of eastbound and westbound SR-91. There is currently no direct connection between the SR-241 and the SR-91 Express Lanes.

The Proposed Project, located at the junction of SR-241 and SR-91 within the cities of Anaheim, Yorba Linda, and Corona and Counties of Orange and Riverside, would provide improved access between SR-241 and SR-91 and is proposed to be a tolled facility. The proposed median-to-median connector project encompasses 12-ORA-241 (Post Mile 36.1/39.1), 12-ORA-91 (Post Mile 14.7/18.9), and 08 RIV-91 (Post Mile 0.0/1.5) for a length of approximately 8.7 miles (mi). The Project Location and Project Vicinity are shown in Figure 1.

Improvements for the connector are limited to 5.9 mi in the cities of Anaheim and Yorba Linda from south of the Windy Ridge Wildlife Undercrossing on SR-241 to Coal Canyon Undercrossing on SR-91. The remaining 2.8 mi of the Proposed Project is limited to FasTrak signage improvements (advance signage) in the cities of Anaheim (1.2 mi total), Yorba Linda (0.1 mi) and Corona (1.5 mi), with exact placement pending the Final Design process. The Proposed Project is mostly within existing Caltrans right-of-way, with one partial acquisition adjacent to eastbound SR-91. Construction access and staging areas would occur within existing Caltrans right-of-way.

The proposed median-to-median connector is a later phase of the Eastern Transportation Corridor (ETC) project, previously approved in 1994. It was originally evaluated as a SR-241/SR-91 high-occupancy vehicle (HOV) direct connector in the

This page intentionally left blank



LEGEND

Project Location

Advance Signage Areas Only (FasTrak)

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad - Black Star Canyon (1988), CA

I:\RBF1101\GIS\ProjectLocation.mxd (5/18/2015)

SR-241/SR-91 Express Lanes Connector

Project Location

This page intentionally left blank

1991 ETC Draft Environmental Impact Report/ Environmental Impact Statement (Draft EIR/EIS), 1992 ETC Final EIR, and the 1994 ETC Final EIS (all of which studied a broader project area with improvements on SR-133, SR-241, and SR-261).

The Systems Management Concept (SMC) for the ETC projected that each Build Alternative would be staged, incorporating general purpose traffic and eventually HOV lanes, to meet the forecasted demand. Under the SMC, ETC construction would be completed in one stage, with three or more phases.

To implement this later phase of the ETC, a Supplemental Draft EIR/EIS is being prepared to focus on the eastern portion of the original project and to address changes to environmental conditions and regulatory requirements. Various alternatives were studied in the 1991 ETC Draft EIR/EIS, 1992 ETC Final EIR, and the 1994 ETC Final EIS; however, the Supplemental Draft EIR/EIS will include a No Build and only one Build Alternative for the median-to-median connector for the following reasons:

- There are limited locations for a median-to-median connector between SR-241 and SR-91;
- The median-to-median connector is a component of a previously approved project and alternative selected during a 1992 EIR Certification and 1994 Record of Decision (ROD);
- Various alternatives were studied for the previously approved project which required consideration of a reasonable range of alternatives; and
- The Supplemental Draft EIR/EIS is being prepared to address changes to environmental conditions and regulatory requirements and not to change the previously approved project as a whole.

The Proposed Project is being coordinated with the Orange County Transportation Authority (OCTA) and the Riverside County Transportation Commission (RCTC). The SR-91 Express Lanes are tolled and are operated by OCTA, from SR-55 to the Orange County/Riverside County line. Easterly from the county line, the lanes are HOV non-tolled lanes; however, as part of the RCTC SR-91 Corridor Improvement Project (SR-91 CIP), RCTC will operate median tolled lanes starting from the County line and ending at Interstate 15 (I-15). As part of the SR-91 CIP, the median tolled lanes include a connector to southbound I-15 general purpose lanes. Implementation of the SR-91 CIP along with the Proposed Project would provide a direct connection between SR-241 and southbound I-15.

Caltrans and the F/ETCA intend to begin construction of the Proposed Project in 2017.

1.2 Need and Purpose

1.2.1 Need

The project is needed to improve access between the SR-241 and SR-91 Express Lanes. The lack of connectivity between SR-241 and the SR-91 Express Lanes negatively affects traffic flow, worsens an already congested SR-91 during peak hours, and results in a long queue of vehicles on northbound SR-241 trying to access eastbound SR-91. As a result, motorists inappropriately "queue jump" (i.e., change lanes at the last minute) during congested traffic periods, contributing to delays.

1.2.2 Purpose

As stated in the Final EIR and Final EIS, the overall objective of the ETC was to accommodate traffic growth associated with planned and approved development in the County of Orange. Specifically, the ETC was proposed to meet the following objectives, which are applicable to the Proposed Project (which is a later phase of the ETC):

- To provide relief for existing freeways;
- To improve traffic flow on the regional transportation system;
- To service existing and planned development consistent with the General Plans of the counties and the cities in areas that will benefit from the project;
- To employ advanced transportation technology for the maximum operational and design efficiency and automatic vehicle monitoring for toll collections; and
- To implement the County of Orange Master Plan of Arterial Highways.

In addition to the originally intended objectives, changed circumstances at the junction of SR-241 and SR-91 have led to the following updated objectives for the Proposed Project:

- Implement the buildout of the ETC, as approved in 1994;
- Attain compatibility with the SR-91 mainline and Express Lanes;
- To improve traffic flow by minimizing queue-jumping on northbound SR-241 at the westbound SR-91 general purpose lane connector and at the eastbound SR-91 general purpose lane connector;

- To help achieve the Regional Mobility Plan goals of reducing emissions from transportation sources by improving movement in congested areas along the SR-241 and SR-91; and
- To enhance the efficiency of the tolled system, thereby reducing congestion on the non-tolled system on the SR-91.

1.3 Project Alternatives

Two alternatives are being analyzed in this document: the Build Alternative and the No Build Alternative.

1.3.1 Build Alternative (Two-lane Express Lanes Connector)

The Build Alternative would construct a two-lane express lane median-to-median connector between SR-241 and SR-91 which would connect lanes from the median of northbound SR-241 to the existing eastbound SR-91 Express Lanes. The reverse movement would also be accommodated, from the westbound SR-91 Express Lanes to the median of southbound SR-241. The connector would be tolled.

On SR-241 at the southern end of the project (near Post Mile 36), FasTrak signage would be improved approximately 0.2 mi south of the Windy Ridge Wildlife Undercrossing. For southbound SR-241, an additional lane and shoulder would be provided by widening the Windy Ridge Wildlife Undercrossing into the existing median and improving the highway median approximately 10,000 feet (ft) to the north. For northbound SR-241, starting approximately 5,000 ft north of the Windy Ridge Wildlife Undercrossing, an additional lane and shoulder will be provided by improving the highway median. At this point on SR-241 (approximately Post Mile 38), the two connector lanes would converge within the existing median on fill and two new bridge structures approximately 700 ft (over the northbound SR-241 to westbound SR-91 general purpose lane connector) and 2,000 ft in length (to merge with SR-91). All approximate lengths will be further refined during the Final Design process.

Additional pavement would be added between the existing northbound SR-241/eastbound SR-91 and the northbound SR-241/westbound SR-91 general purpose connectors in order to accommodate a concrete barrier separation to prevent vehicles traveling on the westbound SR-91 general purpose connector to “queue jump” into the eastbound SR-91 general purpose connector. This would improve traffic flow on the SR-241.

The Build Alternative would merge into the existing OCTA SR-91 Express Lanes at the western limits of the RCTC SR-91 CIP which extends the SR-91 Express Lanes further east to I-15. The Build Alternative is also compatible with the approved SR-91 CIP for both the initial and ultimate configurations, including the number and widths of the SR-91 Express Lanes, express auxiliary lanes, and general purpose lanes.

1.3.1.1 Improvements on Eastbound SR-91

At the western end of SR-91 project terminus, FasTrak signage improvements would occur approximately within the first 0.1 mi of the project. The Gypsum Canyon Road on- and off-ramps and the northbound-SR-241-to-eastbound-SR-91 general purpose connector would be realigned to accommodate the Proposed Project.

To accommodate the addition of the median-to-median connector, the existing eastbound SR-91 lanes would be shifted to the south by adding pavement to the south and restriping. The number of existing eastbound SR-91 general purpose lanes would be maintained within the project limits. At the eastern terminus of the connector bridge structure, the eastbound connector lane would continue for approximately 1 mi within the SR-91 median prior to tapering to tie in to the SR-91 CIP Express Lanes at Coal Canyon Undercrossing. Also near the eastern terminus of the connector lane bridge structure (approximately 2,000 ft west of Gypsum Canyon Road), one additional eastbound auxiliary express lane would be provided, connecting to the auxiliary lane for the SR-91 CIP also at Coal Canyon Undercrossing. These improvements would provide a four-lane express lane facility and tapering down to three lanes, between the connector and Coal Canyon Undercrossing.

The eastbound SR-91 Express Lanes would also have striped buffers (tapering from 0 ft to 4 ft). The Proposed Project would provide a striped buffer to separate the general purpose lanes from the SR-91 Express Lanes and a new striped buffer to temporarily separate the connector lane from the SR-91 Express Lanes. Additional separators within the striped buffers will be further considered during the Final Design process.

Approximately 3,600 ft west of Coal Canyon Undercrossing, grading would occur to accommodate the shift of the lanes to the south. The grading and construction of an access road would encroach into County-owned land on Assessor's Parcel Number (APN) 085-071-56. Approximately 5 acres (ac) of land on this parcel would be acquired from the County of Orange for Caltrans right-of-way. To the north of this parcel, a 1,000 ft retaining wall would be required, but would not be viewable from

the highway. Further details for the retaining wall and the exact length will be determined during the Final Design process.

1.3.1.2 Improvements on Westbound SR-91

At the eastern terminus of the connector bridge structure, the westbound connector lane would extend for approximately 1 mi within the SR-91 median, with the lane tapering approximately 1,000 ft west of Coal Canyon Undercrossing. For the eastern 1,000 ft of the westbound connector express lane, one additional westbound auxiliary express lane would be provided to accommodate merging and diverging to and from the SR-91 Express Lanes. These improvements would provide a four-lane express lane facility for approximately 1,000 ft. To provide the additional SR-91 Express Lanes, restriping would occur between points east of the Gypsum Canyon Road Undercrossing and west of Coal Canyon Undercrossing.

There would be a striped buffer (tapering from 0 ft to 2 ft) to separate the westbound SR-91 Express Lanes from the general purpose lanes. Additional separators within the striped buffer will be further considered during the Final Design process. At the eastern end of SR-91 project terminus, FasTrak signage improvements would occur between Coal Canyon Undercrossing and Green River Road within the existing median and highway footprint of westbound SR-91. (No roadway improvements would occur in this area.)

1.3.2 No Build

Under this alternative, no direct toll connector would be constructed between SR-241 and SR-91. The No Build Alternative:

- Would not close the toll connector gap between SR-241 and the SR-91 Express Lanes;
- Would maintain the existing connections between SR-241 and SR-91 in the Project Area;
- Would not prevent motorists from inappropriately “queue jumping” during congested traffic periods, thereby disrupting traffic flow on the northbound SR-241 connector to the eastbound SR-91 general purpose lanes during PM Peak hours; and
- Would provide a benchmark by which the public and decision-makers can compare the magnitude of the effects of the Build Alternative.

This page intentionally left blank

Chapter 2 Environmental Setting

A region's topographic features can affect pollutant levels; therefore, they are used by the California Air Resources Board (ARB) to determine the boundaries of air basins. A local air district has been formed for each air basin; the district is responsible for providing air quality strategies to bring the air basin into compliance with the national ambient air quality standards (NAAQS).

The Project Site is located in the Counties of Orange and Riverside, an area within the South Coast Air Basin (Basin) that includes the County of Orange and the nondesert parts of the Counties of Los Angeles, Riverside, and San Bernardino. Air quality regulation in the Basin is administered by the South Coast Air Quality Management District (SCAQMD), a regional agency created for the Basin.

2.1 Meteorology

2.1.1 Climate

Climate in the Basin is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the Basin. The region lies in the semipermanent high-pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site monitoring temperature is the Yorba Linda Station.[1] The annual average maximum temperature recorded at this station is 77.5 °F, and the annual average minimum is 49.8 °F. January is typically the coldest month in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal

[1] Western Regional Climatic Center. 2014. Website: http://www.wrcc.dri.edu (accessed January 23, 2015).

regions and slightly heavier showers in the eastern portion of the Basin along the coastal side of the mountains. The climatological station closest to the site that monitors precipitation is the Yorba Linda Station. Average rainfall measured at this station varied from 3.45 inches in February to 0.35 inch or less between May and October, with an average annual total of 14.11 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed from midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Inversion layers are significant in determining ozone (O_3) formation. O_3 and its precursors will mix and react to produce higher concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as CO. PM_{10} is both directly emitted and indirectly created in the atmosphere as a result of chemical reactions. Concentration levels of these pollutants are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, when heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest concentration of pollutants. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas in the Counties of Los Angeles and Orange are transported predominantly onshore into the Counties of Riverside and San Bernardino. In the winter, the greatest pollution problems are CO and oxides of nitrogen (NO_X) because of extremely low inversions and air stagnation during the night and early

morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

2.1.2 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and the World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs related to human activity that include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, hydrofluorocarbon (HFC)-23 (fluoroform), HFC-134a (1,1,1,2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In the United States, the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles make up the largest source (second to electricity generation) of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms or phrases used when discussing the impacts of climate change. "Greenhouse Gas Mitigation" is a phrase that refers to the reduction of GHG emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

The four primary strategies utilized in reducing GHG emissions from transportation sources are to: (1) improve system and operation efficiencies, (2) reduce growth of vehicle miles traveled (VMT), (3) transition to lower GHG fuels, and (4) improve vehicle technologies. To be most effective, all four strategies should be pursued collectively. The following regulatory setting section outlines State and federal efforts to comprehensively reduce GHG emissions from transportation sources.

2.1.2.1 State

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and proactive approach in dealing with GHG emissions and climate change.

- Assembly Bill (AB) 1493, Pavley, Vehicular Emissions-Greenhouse Gases, 2002: This bill requires the ARB to develop and implement regulations to reduce automobile and light-truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year.
- Executive Order (EO) S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32.
- AB 32, Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."
- EO S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and State agencies with regard to climate change.
- EO S-01-07 (January 18, 2007): This order set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.
- Senate Bill (SB) 97, Chapter 185, 2007, Greenhouse Gas Emissions: This bill requires the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.
- SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires the ARB to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan for the achievement of the emissions target for their region.

- SB 391 Chapter 585, 2009 California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

2.1.2.2 Federal

Although climate change and GHG reduction are a concern at the federal level, currently no regulations or legislation have been enacted specifically addressing GHG emissions reductions and climate change at the Proposed Project level. Neither the United States Environmental Protection Agency (EPA) nor the Federal Highway Administration (FHWA) has issued explicit guidance or methods to conduct project-level GHG analysis. The FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the State is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514 – Federal Leadership in Environmental, Energy, and Economic Performance (October 5, 2009). EO 13514 is focused on reducing GHGs internally in federal agency missions, programs, and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

The EPA's authority to regulate GHG emissions stems from the United States Supreme Court decision in Massachusetts vs. EPA (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act (CAA) and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in

December 2009. Based on scientific evidence, it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions. The EPA, in conjunction with the National Highway Traffic Safety Administration (NHTSA), issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010.

The EPA and the NHTSA are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this National Program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012–2016. The standards implemented by this program are expected to reduce GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016).

On August 28, 2012, the EPA and the NHTSA issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model year 2017–2025 passenger vehicles. Over the lifetime of the model year 2017–2025 standards, this program is projected to save approximately 4 billion barrels of oil and 2 billion metric tons of GHG emissions.

The complementary EPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi-trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards will cut GHG emissions and domestic oil use significantly. This program responds to President Barack Obama's 2010 request to jointly establish GHG emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014–2018 heavy-duty vehicles.

2.2 Air Quality Management

Pursuant to the CAA, the EPA established the national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed criteria

pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health and welfare. The NAAQS are two-tiered: primary, to protect public health; and secondary, to prevent degradation to the environment (e.g., impairment of visibility, and damage to vegetation and property).

The six criteria pollutants are O_3, CO, particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. PM includes $PM_{2.5}$ and PM_{10}. The standards for these pollutants are shown in Table 2.1, and the health effects from exposure to the criteria pollutants are described later in this analysis.

2.3 Transportation Conformity Rule

The conformity requirement is based on federal CAA Section 176(c), which prohibits the United States Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The Proposed Project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. The EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for State standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, PM_{10}, and $PM_{2.5}$, and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead; however, lead is not currently required by the CAA to be covered in transportation conformity analysis.

Table 2.1 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[8]	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Ozone (O_3)	1 hour 8 hours	0.09 ppm 0.070 ppm	---[4] 0.075 ppm (4th highest in 3 years)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NO_X) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes.	Federal: Extreme Nonattainment (8-hour) State: Nonattainment (1-hour and 8-hour)
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm[1] 6 ppm	35 ppm 9 ppm ---	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Federal: Attainment/ Maintenance State: Attainment
Respirable Particulate Matter (PM_{10})[2]	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---[2] (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Federal: Attainment/Maintenance State: Nonattainment
Fine Particulate Matter ($PM_{2.5}$)[2]	24 hours Annual 24-hour (conformity process[5]) Secondary Standard (annual; also for conformity process[5])	--- 12 µg/m^3 --- ---	35 µg/m^3 12.0 µg/m^3 65 µg/m^3 12 µg/m^3 (98th percentile over 3 years)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NO_X, sulfur oxides (SO_X), ammonia, and ROG.	Federal: Nonattainment State: Nonattainment
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	0.100 ppm[6] (98th percentile over 3 years) 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain. Part of the "NO_X" group of ozone precursors.	Motor vehicles and other mobile sources; refineries; industrial operations.	Federal: Attainment/Maintenance State: Nonattainment

Table 2.1 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[8]	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm --- 0.04 ppm ---	0.075 ppm[7] (99th percentile over 3 years) 0.5 ppm[9] 0.14 ppm 0.03 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Federal: Attainment/Unclassified State: Attainment/Unclassified
Lead (Pb)[3]	Monthly Calendar Quarter Rolling 3-month average	1.5 µg/m^3 --- ---	--- 1.5 µg/m^3 0.15 µg/m^3 [10]	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from gasoline may exist in soils along major roads.	Federal: Nonattainment (Los Angeles County only) State: Nonattainment (Los Angeles County only)
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Federal: N/A State: Attainment/Unclassified
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	Industrial processes such as refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Federal: N/A State: Attainment/Unclassified
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 percent	---	Reduces visibility. Produces haze. NOTE: Not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other “Class I” areas.	See particulate matter above.	Federal: N/A State: Attainment/Unclassified

Table 2.1 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[8]	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Vinyl Chloride[3]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes	Federal: N/A State: Attainment/Unclassified

Source 1: California Air Resources Board (ARB). Website: www.arb.ca.gov/research/aaqs/aaqs2.pdf (May 29, 2015).
Source 2: ARB, Area Designations. Website: http://www.arb.ca.gov/desig/desig.htm (accessed May 29, 2015).

[1] Rounding to an integer value is not allowed for the State 8-hour CO standard. Violation occurs at or above 9.05 ppm.

[2] Annual PM_{10} NAAQS revoked October 2006; was 50 µg/m^3. 24-hour $PM_{2.5}$ NAAQS tightened October 2006; was 65 µg/m^3. Annual $PM_{2.5}$ NAAQS tightened from 15 µg/m^3 to 12 µg/m^3 December 2012, and secondary standard set at 15 µg/m^3.

[3] The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and the EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for substantial health effects due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[4] Prior to June 2005, the 1-hour NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still in use in some areas where 8-hour ozone emission budgets have not been developed, such as the San Francisco Bay Area.

[5] The 65 µg/m^3 $PM_{2.5}$ (24-hr) NAAQS was not revoked when the 35 µg/m^3 NAAQS was promulgated in 2006. The 15 µg/m^3 annual $PM_{2.5}$ standard was not revoked when the 12 µg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked for conformity purposes only when area designations for the 2008 0.75 ppm standard become effective for conformity use (7/20/2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

[6] Final 1-hour NO_2 NAAQS published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

[7] The EPA finalized a 1-hour SO_2 standard of 75 ppb in June 2010. Nonattainment areas have not yet been designated as of September 2012.

[8] State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise. Federal standards are "not to exceed more than once a year" or as described above.

[9] Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis addresses both primary and secondary NAAQS.

[10] Lead NAAQS are not considered in Transportation Conformity analysis.

µg/m^3 = micrograms per cubic meter
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
N/A = Not Available
NAAQS = national ambient air quality standards
ppb = parts per billion
ppm = parts per million
SIP = State Implementation Plan

As part of the Clean Air Rules of 2004, the EPA published a final rule in the Federal Register on July 1, 2004, to amend the Transportation Conformity Rule to include criteria and procedures for the new 8-hour O_3 and $PM_{2.5}$ NAAQS. The final rule addressed a March 2, 1999, court decision by incorporating the EPA and USDOT guidance. On July 20, 2004, the EPA published a technical correction notice to correct two minor errors in the July 1, 2004, notice. To remain consistent with the stricter federal standards, the ARB approved a new 8-hour O_3 standard (0.07 parts per million [ppm], not to be exceeded) for O_3 on April 28, 2005. Additionally, the ARB retained the current 1-hour-average standard for O_3 (0.09 ppm) and the current monitoring method for O_3, which uses the ultraviolet (UV) photometry method.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. The ARB provided the EPA with California's recommendations for 8-hour O_3 area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. On December 3, 2003, the EPA published its proposed designations. The EPA's proposal differs from the State's recommendations primarily on the appropriate boundaries for several nonattainment areas. The ARB responded to the EPA's proposal on February 4, 2004. On April 15, 2004, the EPA announced the new nonattainment areas for the 8-hour O_3 standard. The designations and classifications became effective on June 15, 2004. The transportation conformity requirement became effective on June 15, 2005.

The EPA proposed a $PM_{2.5}$ implementation rule in September 2003 and made final designations in December 2004. The $PM_{2.5}$ standard complements existing national and State ambient air quality standards that target the full range of inhalable PM_{10}.

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and State air quality regulating agencies. Data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment," "nonattainment," or "maintenance," depending on whether the regions meet the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of nonattainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the State on a pollutant-by-pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS. Table 2.1 lists the attainment status for each of the criteria pollutants in the Basin.

2.4 Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Sensitive land uses located directly adjacent to the Project Area include residences, a church, a recreational vehicle (RV) campground, and playgrounds. Table 2.2 lists the address and distance from the edge of pavement for the sensitive land uses in the project area.

Table 2.2 Sensitive Land Uses Within the Project Area

Land Use Type	Address	Distance from Edge of Pavement (feet)
Campground	24001 Santa Ana Canyon Road, Anaheim, CA	150
Church	8712 East Santa Ana Canyon Road, Anaheim, CA	400
Residences	Canyon Height Road, Anaheim, CA	500
Residences	East Crestview Lane, Anaheim, CA	650
Residences	East Garden View Drive, Anaheim, CA	650

Source: LSA Associates, Inc., July 2015

Chapter 3 Regulatory Framework

3.1 Federal Clean Air Act

The CAA (1977 Amendments–42 United States Code [USC] 7401 et seq.) states that the federal government is prohibited from engaging in, supporting, providing financial assistance for, licensing, permitting, or approving any activity that does not conform to an applicable SIP. Federal actions relating to transportation plans, programs, and projects developed, funded, or approved under 23 USC of the Federal Transit Act (40 USC 1601 et seq.) are covered under separate regulations for transportation conformity.

In the 1990 CAA amendments, the EPA included provisions requiring federal agencies to ensure that actions undertaken in nonattainment or attainment-maintenance areas are consistent with applicable SIPs. The process of determining whether or not a federal action is consistent with an applicable SIP is called conformity.

3.2 California Clean Air Act

The ARB administers the air quality policy in California. These standards, included with the NAAQS in Table 2.1, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, California Ambient Air Quality Standard (CAAQS) have been established for visibility-reducing particulates, hydrogen sulfide, and sulfates. The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with the CAAQS. These AQMPs also serve as the basis for preparation of the SIP for the State of California.

The ARB establishes policy and statewide standards and administers the State's mobile source emissions control program. In addition, the ARB oversees air quality programs established by State statute, such as AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987.

3.3 California State Implementation Plan

Federal clean air laws require areas with unhealthy levels of O_3, CO, NO_2, SO_2, and inhalable PM to develop plans, known as SIPs, describing how they will attain

NAAQS. The 1990 amendments to the CAA set new deadlines for attainment based on the severity of the pollution problem and launched a comprehensive planning process for attaining the NAAQS. The promulgation of the new national 8-hour O_3 standard and the $PM_{2.5}$ standards in 1997 will result in additional statewide air quality SIPs, which are not single documents, but a compilation of new and previously submitted plans, programs (such as monitoring, modeling, and permitting), district rules, State regulations, and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes the ARB the Lead Agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair, prepare SIP elements and submit them to the ARB for review and approval. The ARB then forwards SIP revisions to the EPA for approval and publication in the Federal Register. CFR Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items included in the California SIP. Many additional California submittals are pending EPA approval.

3.4 South Coast Air Quality Management District

The SCAQMD and Southern California Association of Governments (SCAG) are responsible for formulating and implementing the AQMP for the Basin. Every 3 years, the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2003 AQMP in August 2003 and forwarded it to the ARB for review and approval. The ARB approved a modified version of the 2003 AQMP and forwarded it to the EPA in October 2003 for review and approval.

The 2003 AQMP updates the attainment demonstration for the federal standards for O_3 and PM_{10}, replaces the 1997 attainment demonstration for the federal CO standard, provides a basis for a maintenance plan for CO for the future, and updates the maintenance plan for the federal NO_2 standard that the Basin has met since 1992.

The 2003 AQMP proposes policies and measures to achieve federal and State standards for healthful air quality in the Basin. This revision to the AQMP also addresses several State and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. This AQMP is consistent with and builds on the approaches taken in the 1997 AQMP and the 1999 Amendments to the O_3 SIP for the Basin for the attainment of the

federal O_3 air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/1999 Plan) to offset increased emission estimates from mobile sources and meet all federal criteria pollutant standards within the time frames allowed under the CAA.

The SCAQMD adopted the 2007 AQMP on June 1, 2007, which it describes as a regional and multiagency effort (i.e., the SCAQMD Governing Board, ARB, SCAG, and EPA). State and federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also incorporates substantial new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP includes a request to have the Basin's federal 8-hour O_3 attainment status changed from severe to extreme. This change would extend the attainment deadline from 2021 to 2023. The ARB approved the 2007 AQMP on September 27, 2007, and adopted it as part of the 2007 SIP.

The 2012 AQMP incorporated the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan (RTP)/ Sustainable Communities Strategy (SCS) and updated emission inventory methodologies for various source categories. The 2012 AQMP included the new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches. The SCAQMD adopted the 2012 AQMP in December 2012 and forwarded it to ARB for review and approval.

SCAG is responsible under the CAA for determining the conformity of projects, plans, and programs with the SCAQMD AQMP. As indicated in the California Environmental Quality Act (CEQA) *Air Quality Handbook*, there are two main indicators of consistency:

- Whether the Proposed Project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP; and
- Whether the Proposed Project would exceed the AQMP's assumptions for 2020 or increments based on the year of project build out and phase.

This page intentionally left blank

Chapter 4 Monitored Air Quality

The SCAQMD operates several air quality monitoring stations within the Basin. The Anaheim Air Quality Monitoring Station, located approximately 12 mi west of the Project Site at 1630 W. Pampas Lane in Anaheim, California, monitors four of the five criteria pollutants: CO, O_3, particulate matter, and NO_2. The next closest monitoring station with SO_2 data is the Costa Mesa Station, which is located approximately 16 mi southwest of the Project Site at 2850 Mesa Verde Drive in Costa Mesa, California. Air quality trends identified from data collected at both air quality monitoring stations between 2012 and 2014 are listed in Table 4.1.

The following air quality information briefly describes the various types of pollutants monitored within the vicinity of the Proposed Project study area.

4.1 Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, and is emitted almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment/maintenance for the federal CO standard and attainment for the State CO attainment standard. State and federal standards were not exceeded between 2012 and 2014.

4.2 Ozone

O_3, a colorless gas with a sharp odor, is one of a number of substances called photochemical oxidants (highly reactive secondary pollutants). These oxidants are formed when hydrocarbons, NO_X, and related compounds interact in the presence of ultraviolet sunlight. The Basin is a nonattainment area for both the federal and State ozone standards. The State 1-hour O_3 standard was exceeded twice in 2014. The State 8-hour O_3 standard was exceeded 0–6 times per year in the last 3 years. The federal 8-hour O_3 standard was exceeded four times in 2014.

4.3 Nitrogen Dioxide

NO_2 is a reddish-brown gas with an odor similar to bleach and is a byproduct of fuel combustion, which results from mobile and stationary sources. It has complex daily (diurnal) concentrations that are typically higher at night. NO_2 is itself a regulated pollutant, but it also reacts with hydrocarbons in the presence of sunlight to form O_3

Table 4.1 Local Air Quality Levels

Pollutant		Standard	2012	2013	2014
Carbon Monoxide[1]					
Max 1-hour concentration (ppm)			3.0	3.4	3.1
No. of days exceeded:	State	> 20 ppm/1-hour	0	0	0
	Federal	> 35 ppm/1-hour	0	0	0
Max 8-hour concentration (ppm)			2.3	2.6	2.1
No. of days exceeded:	State	≥9 ppm/8-hour	0	0	0
	Federal	≥9 ppm/8-hour	0	0	0
Ozone[1]					
Max 1-hour concentration (ppm)			0.079	0.084	0.111
No. of days exceeded:	State	> 0.09 ppm/1-hour	0	0	2
Max 8-hour concentration (ppm)			0.067	0.070	0.081
No. of days exceeded:	State	> 0.07 ppm/8-hour	0	0	6
	Federal	> 0.075 ppm/8-hour	0	0	4
Particulates (PM_{10})[1]					
Max 24-hour concentration (µg/m^3)			48.0	77.0	85.0
No. of days exceeded:	State	> 50 µg/m^3	0	1	2
	Federal	> 150 µg/m^3	0	0	0
Annual average concentration (µg/m^3)			22.3	25.2	26.7
Exceeds Standard?	State	> 20 µg/m^3	Yes	Yes	Yes
Particulates ($PM_{2.5}$)[1]					
Max 24-hour concentration (µg/m^3)			50.1	37.8	45.0
No. of days exceeded:	Federal[2]	> 35 µg/m^3	4	1	4
Annual average concentration (µg/m^3)			10.8	10.1	16.2
Exceeds Standard?	State	> 12 µg/m^3	No	No	Yes
	Federal	> 12 µg/m^3	No	No	Yes
Nitrogen Dioxide[1]					
Max 1-hour concentration (ppm): State		> 0.18 ppm/1-hour	0.0673	0.0815	0.0758
No. of days exceeded			0	0	0
Annual average concentration: Federal		0.053 ppm annual average	0.014	N/A	N/A
Exceed Federal standard?			No	N/A	N/A
Sulfur Dioxide[2]					
Max 24-hour concentration (ppm)			0.001	0.001	0.001
No. of days exceeded:	State	0.04 ppm	0	0	0
	Federal	0.14 ppm	0	0	0
Annual average concentration: Federal		0.030 ppm annual average	N/A	N/A	N/A
Exceed Federal standard?			N/A	N/A	N/A

Sources: United States Environmental Protection Agency and California Air Resources Board (2012 to 2014). Websites: http://www.epa.gov/airdata/ad_maps.html and http://www.arb.ca.gov/adam/ (accessed June 1, 2015).

[1] Air monitoring data obtained from the Anaheim Station.

[2] Air monitoring data obtained from the Costa Mesa Station.

µg/m^3 = micrograms per cubic meter
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
max = maximum
N/A = Not Available
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ppm = parts per million

and other compounds that make up photochemical smog. NO_2 decreases lung function and may reduce resistance to infection. The entire Basin has not exceeded either federal or State standards for NO_2 in 2012 and 2014. It is designated as a maintenance area under the federal standards and a nonattainment area under the State standards.

4.4 Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter ($PM_{2.5}$), and reduces visibility and the level of sunlight. The entire Basin is in attainment with both federal and State SO_2 standards.

4.5 Coarse Particulate Matter

PM_{10} occurs from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and substantially reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. The State 24-hour PM_{10} standard was exceeded 1–2 times in the last 3 years. The State annual average was exceeded in each of the past 3 years.

Over 99 percent of inhaled particulate matter is either exhaled or trapped in the upper areas of the respiratory system and expelled. The balance enters the windpipe and lungs, where some particulates cling to protective mucus and are removed. Other mechanisms, such as coughing, also filter out or remove particles. Collectively, these pulmonary clearance mechanisms protect the lungs from the majority of inhalable particles.

Irritating odors are often associated with particulates. Some examples of sources of these types of odors are gasoline and diesel engine exhausts, large-scale coffee roasting, paint spraying, street paving, and trash burning.

4.6 Fine Particulate Matter

$PM_{2.5}$ consists of “fine” particles and is believed to pose the greatest health risk. Because of their small size (approximately one-thirtieth the average width of a human hair), fine particles can lodge deeply into the lungs. Particulate matter impacts primarily affect infants, children, the elderly, and those with preexisting

cardiopulmonary disease. Industry groups challenged the new standard in court, and implementation of the standard was blocked.

The federal 24-hour standard was exceeded 1–4 times in the past 3 years. The annual average concentrations exceeded the State and federal standards in 2014.

4.7 Volatile Organic Compounds or Reactive Organic Gases

Hydrocarbon compounds are compounds containing various combinations of hydrogen and carbon atoms that exist in the ambient air. Volatile organic compounds (VOCs) contribute to the formation of smog and/or may themselves be toxic. VOCs often have an odor, and some examples include gasoline, alcohol, and solvents used in paints. There are no specific State or federal VOC thresholds, as they are regulated by individual air districts as O_3 precursors. Reactive organic gases (ROGs) are a form of VOCs.

4.8 Lead

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. With the exception of Los Angeles County, which is in nonattainment for State and federal standards, the entire Basin is in attainment for State and federal lead standards.

Chapter 5 Potential Air Quality Impacts

5.1 Short-Term Impacts

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment also are anticipated and would include CO, NO_X, VOCs, directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and toxic air contaminants such as diesel exhaust particulate matter.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, and paving roadway surfaces. Construction-related effects on air quality from most roadway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM_{10}, $PM_{2.5}$, CO, SO_2, NO_X, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after drying. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, the silt content of soil, wind speed, and the amount of equipment operating at the time. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_X, VOCs, and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting federal standards can contain up to 5,000 ppm of sulfur, whereas on-road diesel is restricted to less than 15 ppm of sulfur. However, under California law and ARB regulations, off-road diesel fuel used

in California must meet the same sulfur and additional standards as on-road diesel fuel. Accordingly, SO_2-related issues due to diesel exhaust would be minimal.

The maximum amount of construction-related emissions during a peak construction day is presented in Table 5.1 (model data is provided in Appendix A). The PM_{10} and $PM_{2.5}$ emissions assume a 50 percent control of fugitive dust as a result of watering and associated dust-control measures. The emissions presented below are based on the best information available at the time of calculations. The Proposed Project is anticipated to take approximately 18 months to construct beginning in 2017. Caltrans Standard Specifications for construction (Section 14-9.03 [Dust Control] and Section 14-9.02 [Air Pollution Control]) will be adhered to in order to reduce emissions generated by construction equipment. Additionally, the SCAQMD has established Rule 403 for reducing fugitive dust emissions. The best available control measures (BACM), as specified in SCAQMD Rule 403, shall be incorporated into the Proposed Project commitments. With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day) and Measures AQ-1 through AQ-5 (see Chapter 6), fugitive dust and exhaust emissions from construction activities would not result in any adverse air quality impacts.

Table 5.1 Maximum Project Construction Emissions

Project Phases	ROG	CO	NO_X	Total PM_{10}	Total $PM_{2.5}$
Grubbing/Land Clearing (lbs/day)	7.2	35.0	37.1	17.2	5.1
Grading/Excavation (lbs/day)	13.4	66.5	107.9	20.5	8.2
Drainage/Utilities/Sub-Grade (lbs/day)	11.2	57.1	80.3	19.4	7.2
Paving (lbs/day)	7.1	37.8	41.0	2.6	2.3
Maximum (lbs/day)	13.4	66.5	107.9	20.5	8.2

Source: LSA Associates, Inc. (April 2015).
CO = carbon monoxide
lbs/day = pounds per day
NO_X = oxides of nitrogen
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

5.1.1 Naturally Occurring Asbestos

The Proposed Project is located in the Counties of Orange and Riverside, which are not among the counties listed as containing serpentine and ultramafic rock. Therefore, the impact from naturally occurring asbestos during project construction would be minimal to none.

5.2 Carbon Monoxide Screening Analysis

The methodology required for a CO local analysis is summarized in the Caltrans Transportation Project-Level Carbon Monoxide Protocol (Protocol), Section 3 (Determination of Project Requirements) and Section 4 (Local Analysis). In Section 3, the Protocol provides two conformity requirement decision flowcharts that are designed to assist the project sponsors in evaluating the requirements that apply to specific projects. The flowchart in Figure 1 (Appendix B of this report) of the Protocol applies to new projects and was used in this local analysis conformity decision. Below is a step-by-step explanation of the flow chart. Each level cited is followed by a response, which in turn, determines the next applicable level of the flowchart for the Proposed Project. The flowchart begins with Section 3.1.1:

- **3.1.1. Is this project exempt from all emissions analyses?**
  NO.

  Table 1 of the Protocol is Table 2 of Section 93.126 of 40 CFR. Section 3.1.1 is inquiring if the Proposed Project is exempt. Such projects appear in Table 1 of the Protocol. The Build Alternative does not appear in Table 1. Therefore, the Proposed Project is not exempt from all emissions analyses.

- **3.1.2. Is the project exempt from regional emissions analyses?**
  NO.

  Table 2 of the Protocol is Table 3 of Section 93.127. The question is attempting to determine whether the Proposed Project is listed in Table 2. The Proposed Project is an interchange reconfiguration project. However, the Proposed Project would add a new connector between SR-241 and the SR-91 Express Lanes. Therefore, it is not exempt from regional emissions analysis.

- **3.1.3. Is the project locally defined as regionally significant?**
  YES.

  As mentioned above, the Proposed Project would add a new connector between SR-241 and the SR-91 Express Lanes. Therefore, the Proposed Project is regionally significant.

- **3.1.4. Is the project in a federal attainment area?**
  NO.

  The Proposed Project is located within an attainment/maintenance area for the federal CO standard.

- **3.1.5. Are there a currently conforming Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP)?**
  YES.

  Refer to Appendix C.

- **3.1.6. Is the project included in the regional emissions analysis supporting the currently conforming RTP and TIP?**
  YES.

  The Proposed Project is included in the SCAG 2012 RTP and the 2015 FTIP (Project ID: ORA111207; Description: HOV/HOT Connector: NB SR-241 to EB SR-91, WB SR-91 to SB SR-241 (1 Lane each dir).

- **3.1.7. Has the project design concept and/or scope changed significantly from that in the regional analysis?**
  NO.

  The proposed Build Alternative is consistent with the Proposed Project description in the 2012 RTP/2015 FTIP.

- **3.1.9. Examine local impacts.**
  Section 3.1.9 of the flowchart directs the Proposed Project evaluation to Section 4 (Local Analysis) of the Protocol. This includes Figure 1.

Section 4 contains Figure 3 from the Local CO Analysis (Appendix A of this report). This flowchart is used to determine the type of CO analysis required for the Build Alternative. Below is a step-by-step explanation of the flowchart. Each level cited is followed by a response, which in turn, determines the next applicable level of the flowchart for the Build Alternative. The flowchart begins at Level 1:

- **Level 1. Is the project in a CO non-attainment area?**
  NO.

  The Project Site is located in an area that has demonstrated attainment with the federal CO standard.

- **Level 1 (cont.). Was the area redesignated as "attainment" after the 1990 Clean Air Act?**
  YES.

- **Level 1 (cont.). Has "continued attainment" been verified with the local Air District, if appropriate?**
  YES.

  The South Coast Air Basin (Basin) was designated as attainment/maintenance by the United States Environmental Protection Agency (EPA) on June 11, 2007. (Proceed to Level 7.)

- **Level 7. Does the project worsen air quality?**
  NO.

  Because the Proposed Project would not meet any of the criteria discussed below, it would not potentially worsen air quality.

  a. *The project significantly increases the percentage of vehicles operating in cold start mode. Increasing the number of vehicles operating in cold start mode by as little as 2% should be considered potentially significant.*

     The percentage of vehicles operating in cold start mode is the same or lower for the connector under study compared to those used for the intersections in the attainment plan. It is assumed that all vehicles on the SR-241 and SR-91 are in a fully warmed-up mode. Therefore, this criterion is not met.

  b. *The project significantly increases traffic volumes. Increases in traffic volumes in excess of 5% should be considered potentially significant. Increasing the traffic volume by less than 5% may still be potentially significant if there is also a reduction in average speeds.*

Based on the *Traffic Analysis Report* (June 2015), the Proposed Project would increase traffic volume by 1–3 percent on SR-91. The 2017 and 2040 traffic volumes with and without the Proposed Project are shown in Tables 5.2 and 5.3, respectively. Due to the low traffic volumes on SR-241 the percentage increase in traffic is greater than 5 percent. However, the traffic analysis determined that the

Table 5.2 2017 Traffic Volumes

Freeway	No Build Alternative	Build Alternative	
	Total ADT/ ADT Truck	Total ADT/ ADT Truck	Percent Change in Traffic
SR-91	303,200/14,550	311,000/14,683	2.6
SR-241	52,200/887	60,000/1,020	14.9

Source: *Traffic Analysis Report* (June 2015).
ADT = Average Daily Traffic
SR-91 = State Route 91
SR-241 = State Route 241

Table 5.3 2040 Traffic Volumes

Freeway	No Build Alternative	Build Alternative	
	Total ADT/ ADT Truck	Total ADT/ ADT Truck	Percent Change in Traffic
SR-91	345,400/16,580	348,800/16,638	1.0
SR-241	58,600/,996	62,000/1,054	5.8

Source: *Traffic Analysis Report* (June 2015).
ADT = Average Daily Traffic
SR-91 = State Route 91
SR-241 = State Route 241

Proposed Project would increase the average vehicle speeds in the Project Area by 2–4 miles per hour (mph) and would decrease the average delay per vehicle by up to 20 percent. Therefore, the Proposed Project would not worsen air quality.

c. *The project worsens traffic flow. For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersection segments, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow.*

As shown in Tables 5.4 through 5.5, the level of service (LOS) on SR-91 and SR-241 for the Build Alternative would remain the same as the No Build Alternative. Therefore, this criterion is not met.

Table 5.4 2017 Level of Service

Freeway	No Build Alternative	Build Alternative
SR-91	F	F
SR-241	A	A

Source: *Traffic Analysis Report* (June 2015).
SR-91 = State Route 91
SR-241 = State Route 241

Table 5.5 2040 Level of Service

Freeway	No Build Alternative	Build Alternative
SR-91	F	F
SR-241	A	A

Source: *Traffic Analysis Report* (June 2015).
SR-91 = State Route 91
SR-241 = State Route 241

The Proposed Project is not expected to result in any concentrations exceeding the 1-hour or 8-hour CO standards. Therefore, a detailed CALINE4 CO hot-spot analysis is not required.

5.3 $PM_{2.5}$/PM_{10} Hot-Spot Analysis

The Proposed Project is within a nonattainment area for federal $PM_{2.5}$ and within an attainment/maintenance area for federal PM_{10} standards. Therefore, per 40 CFR, Part 93, analyses are required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as an air quality concern. The Proposed Project does not qualify as a project of air quality concern (POAQC) because of the following reasons:

1. The Proposed Project is a highway expansion project. The Proposed Project would build a new tolled connection between SR-241 and the SR-91 Express Lanes. Based on the *Traffic Analysis Report* (June 2015), the Build Alternative would increase the traffic volumes along SR-241 and SR-91. The average truck percentages along the Proposed Project segments of SR-91 and SR-241 are 4.8 and 1.7 percent, respectively. Tables 5.2 and 5.3 list the average daily traffic (ADT) and truck ADT volumes along SR-91 and SR-241 for the 2017 and 2040

conditions, respectively. The largest increase in ADT due to the Proposed Project is 7,800 vehicles per day. However, due to the very low truck percentage on SR-241, the largest increase in truck ADT due to the Proposed Project is 133 vehicles per day. These increases would not exceed the 125,000 average daily trips or 10,000 truck trip criteria for a POAQC.

2. The Proposed Project does not affect intersections that are at LOS D, E, or F with a significant number of diesel vehicles.
3. The Proposed Project does not include the construction of a new bus or rail terminal.
4. The Proposed Project does not expand an existing bus or rail terminal.
5. The Proposed Project is not in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The project-level PM hot-spot analysis was presented to SCAG's Transportation Conformity Working Group (TCWG) for discussion and review on April 28, 2015. Per Caltrans Headquarters policy, all nonexempt projects must go through review by the TCWG. This project was approved and concurred upon by Interagency Consultation at the TCWG meeting as a project not having adverse impacts on air quality, and it meets the requirements of the CAA and 40 CFR 93.116. A copy of the TCWG finding is included in Appendix D.

Therefore, the Proposed Project meets the CAA requirements and 40 CFR 93.116, without any explicit hot-spot analysis. The Proposed Project would not create a new or worsen an existing PM_{10} or $PM_{2.5}$ violation.

5.4 Long-Term Regional Vehicle Emission Impacts

The *Traffic Analysis Report* (June 2015), determined that the Proposed Project would increase the average vehicle speeds in the Project Area by 2–4 mph and would decrease the average delay per vehicle by up to 20 percent. In addition, as shown in Tables 5.2 and 5.3, the largest increase in daily trips would be 7,800 in 2017 and 3,400 in 2040. Therefore, the project would have no long-term regional vehicle emission impacts.

5.5 Qualitative Project-Level Mobile Source Air Toxics Discussion

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Controlling air toxic emissions became a national priority with the passage of the CAA Amendments of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in its latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Volume 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System. In addition, the EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from its 1999 National Air Toxics Assessment (NATA). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (Diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While the FHWA considers these seven compounds to be the priority mobile source air toxics (MSAT), the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines.

Based on an FHWA analysis using EPA's MOVES2010b Model, as shown in Figure 2, even if VMT increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period. The projected reduction in MSAT emissions would be slightly different in California due to the use of the EMFAC emission model in place of the MOVES model.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be

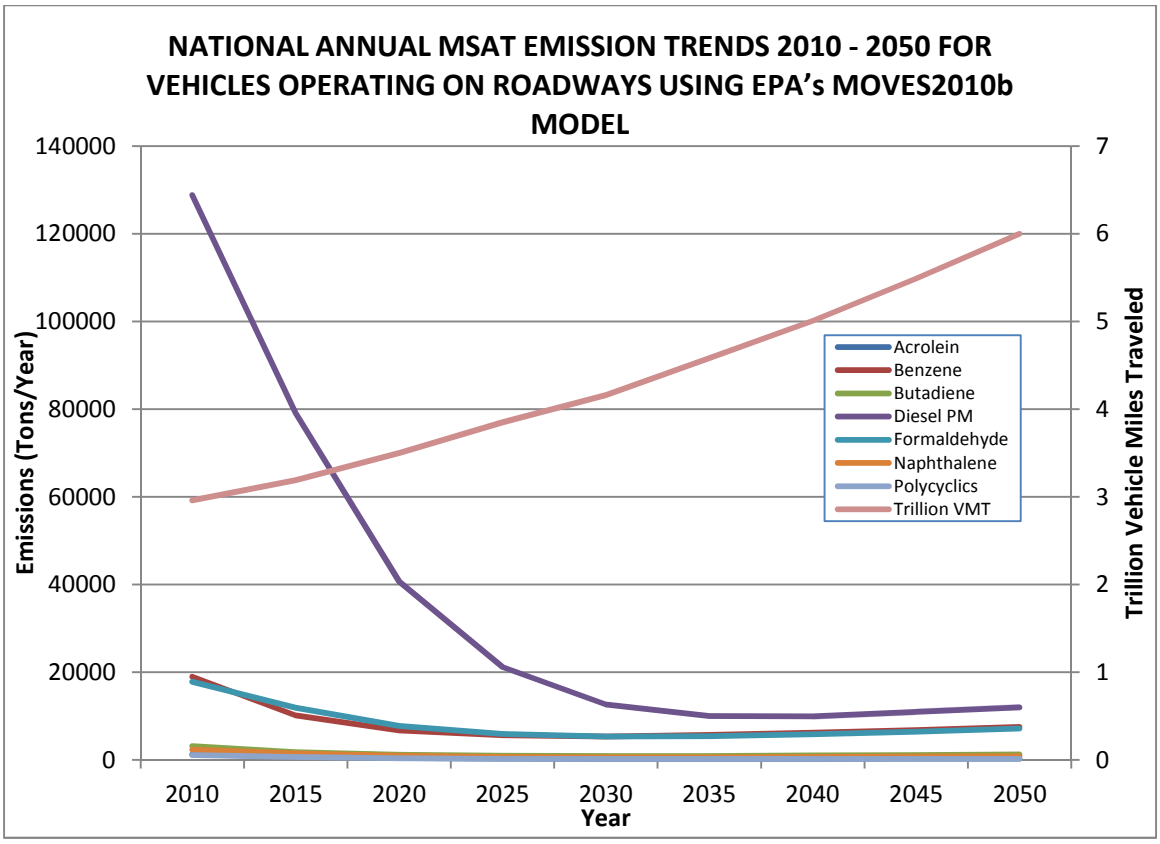


Figure 2 National MSAT Emission Trends

factored into project-level decision-making within the context of the National Environmental Policy Act (NEPA).

Nonetheless, air toxics concerns continue to be raised regarding highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, the EPA, the Health Effects Institute, and others have funded and conducted research studies in order to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the federal government be interpreted and administered in accordance with its environmental protection goals. NEPA also requires federal agencies to use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment. NEPA requires, and FHWA is committed to, the

examination and avoidance of potential impacts to the natural and human environment when considering approval of proposed transportation projects. In addition to evaluating the potential environmental effects, we must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest. The FHWA policies and procedures for implementing NEPA are contained in regulations at 23 CFR Part 771.

In December 2012, the FHWA issued guidance to advise FHWA division offices as to when and how to analyze MSATs in the NEPA process for highways. That document is an update to the guidance released in February 2006 and September 2009. The guidance is described as interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance. This analysis follows the FHWA guidance.

5.5.1 Information that is Unavailable or Incomplete

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. It is the lead authority for administering the CAA and its amendments and has specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. It maintains the Integrated Risk Information System, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects." Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute. Two Health Effects Institute studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health

effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious are the adverse human health effects of MSAT compounds at current environmental concentrations or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and then final determination of health impacts; each step in the process builds on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevent a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70-year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by the Health Effects Institute. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA and the Health Effects Institute have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires the EPA to determine a “safe” or “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately

100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the United States Court of Appeals for the District of Columbia Circuit upheld the EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against project benefits such as reducing traffic congestion, accident rates, and fatalities, plus improved access for emergency response, as these benefits are better suited for quantitative analysis.

5.5.2 MSAT Analysis Methodology

Depending on the specific project circumstances, the FHWA has identified three levels of analysis.

(1) Projects with No Meaningful Potential MSAT Effects, or Exempt Projects

The types of projects in this category include the following:

- Projects qualifying as a Categorical Exclusion under 23 CFR 771.117(c) (subject to consideration whether unusual circumstances exist under 23 CFR 771.117(b));
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

For projects that are categorically excluded under 23 CFR 771.117(c), or that are exempt from conformity requirements under the CAA pursuant to 40 CFR 93.126, no analysis or discussion of MSAT is necessary. Documentation

sufficient to demonstrate that the project qualifies as a Categorical Exclusion and/or exempt project will suffice. For other projects with no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is recommended. However, the project record should document the basis for the determination of "no meaningful potential impacts" with a brief description of the factors considered.

(2) Projects with Low Potential MSAT Effects

The types of projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects.

It is anticipated that most highway projects that need an MSAT assessment will fall into this category. Any projects not meeting the criteria in Category (1) or Category (3) below should be included in this category. Examples of these types of projects are minor widening projects; new interchanges or replacement of a signalized intersection on a surface street; or projects in which design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT).

For these projects, a qualitative assessment of emissions projections should be conducted. This qualitative assessment would compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including the No Build Alternative, based on VMT, vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by the EPA. Because the emission effects of these projects are typically low, it is expected that there would be no appreciable difference in overall MSAT emissions among the various alternatives.

(3) Projects with Higher Potential MSAT Effects

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. It is expected that a limited number of projects would meet this two-pronged test. To fall into this category, a project should:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating a significant increase in the number of diesel vehicles for expansion projects; or
- Create new capacity or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes for which the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year.

The project should also be:

- Proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts. For these projects, a quantitative assessment of emissions projections should be conducted. This approach would include a quantitative analysis to forecast local-specific emission trends of the priority MSAT for each alternative for use as a basis of comparison.

The *Traffic Analysis Report* (June 2015), determined that the Proposed Project would increase the average vehicle speeds in the Project Area by 2–4 mph and would decrease the average delay per vehicle by up to 20 percent. In addition, as shown in Tables 5.2 and 5.3, the largest increase in daily trips would be 7,800 in 2017 and 3,400 in 2040. Therefore, a quantitative analysis of MSAT emissions is not required (FHWA 2012; and California ARB 2005).

5.6 Air Quality Management Plan Consistency Analysis

An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The AQMP's main purpose is to bring the area into compliance with the requirements of federal and State air quality standards. The AQMP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the AQMP. For a project in the Basin to be consistent with the AQMP, the pollutants emitted from the project must not exceed the SCAQMD significance threshold or cause a significant impact on air quality. If feasible mitigation measures can be implemented to reduce

the project's impact level from significant to less than significant under CEQA, the project is considered to be consistent with the AQMP.

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQMP in the following ways: it fulfills the CEQA goal of fully informing local agency decision-makers of the environmental costs of the project under consideration at a planning stage early enough to ensure that air quality concerns are fully addressed, and it provides the local agency with ongoing information, assuring local decision-makers that they are making real contributions to clean air goals defined in the most current AQMP (adopted in 2003 and updated in 2007). Because the AQMP is based on projections from local General Plans, projects consistent with the local General Plan are considered consistent with the AQMP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the AQMP. The air quality models use project-specific data to estimate the quantity of pollutants generated from the implementation of a project. The results for the no project and the Proposed Project scenarios in the horizon year are compared to the AQMP's air quality projections.

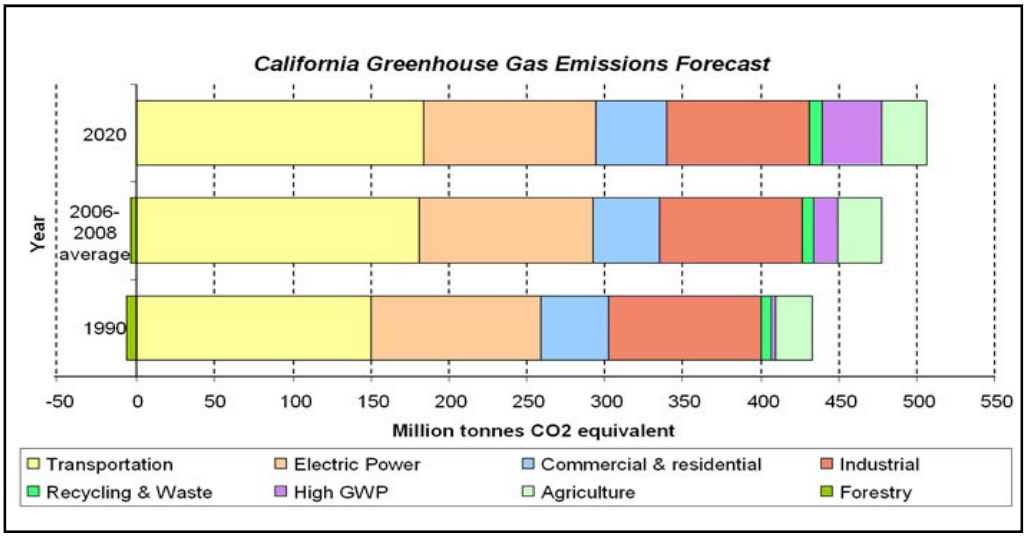
As shown above, the Proposed Project would not substantially contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the Proposed Project are considered to be consistent with the General Plans for the Cities of Anaheim, Yorba Linda, and Corona and the Counties of Orange and Riverside, as well as with the SCAG forecast, and are, therefore, consistent with the AQMP.

5.7 Climate Change/GHGs

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines Sections 15064(h)(1) and 15130. To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future

projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG. As part of its supporting documentation for the Draft Scoping Plan, the ARB released the GHG inventory for California (forecast last updated on October 28, 2010). The forecast (shown in Figure 3) is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for years 2006, 2007, and 2008.



Source: California Air Resources Board. Website: http://www.arb.ca.gov/cc/inventory/data/forecast.htm.

Figure 3 California Greenhouse Gas Forecast

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human-made GHG emissions are from transportation, Caltrans has created and is implementing the *Climate Action Program* at Caltrans that was published in December 2006 (see *Climate Action Program* at Caltrans [December 2006]).[1]

[1] California Department of Transportation. *Climate Action Program*. Website: www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf (accessed December 2013).

One of the main strategies in the Caltrans *Climate Action Program* to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 miles per hour [mph]) and speeds over 55 mph; the most severe emissions occur from 0–25 mph (see Figure 4 below). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

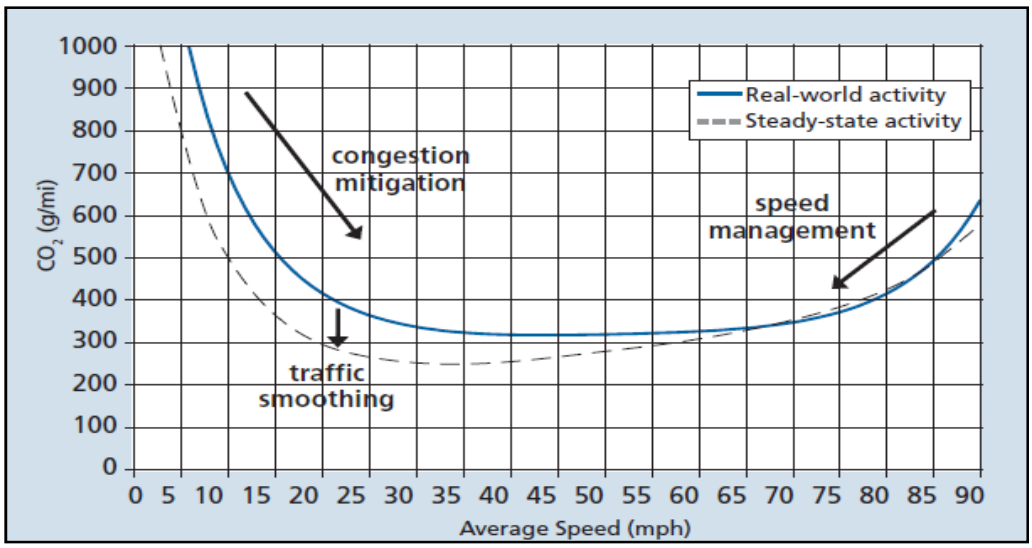


Figure 4 Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emissions[1]

5.7.1 Project Operational Emissions

SCAG included an SCS as part of its 2012 RTP. Under SB 375, the primary goal of the SCS is to provide a vision for future growth that will decrease per capita GHG emissions from automobiles and light trucks. By providing improved freeway connections, the Build Alternative would help achieve the improved access and mobility goals of SCAG's 2012 RTP/SCS.

The *Traffic Analysis Report* (June 2015), determined that the Proposed Project would increase the average vehicle speeds in the Project Area by 2-4 miles per hour (mph) and would decrease the average delay per vehicle by up to 20 percent. This

[1] Transportation Research Board. *Traffic Congestion and Greenhouse Gases*: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May–June 2010). Website: http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf.

improvement in vehicle speed would help offset the 3,400 to 7,800 increase in daily trips shown in Tables 5.2 and 5.3. Therefore, the Proposed Project alternative would not subtantially alter the long-term GHG emissions.

5.7.2 Project Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. As discussed below in Chapter 6, idling times would be restricted to 10 minutes in each direction for passenger cars during lane closures and 5 minutes for construction vehicles. The restriction of idling times reduces harmful emissions from passenger cars and diesel-powered construction vehicles.

5.7.3 Greenhouse Gas Reduction Strategies

5.7.3.1 Assembly Bill 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as the ARB works to implement EO S-3-05 and EO S-01-07 and helps achieve the targets set forth in AB 32. Many of the strategies that Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the State's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's levels and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together is expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction

goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as depicted in Figure 5, The Mobility Pyramid.

Figure 5 The Mobility Pyramid

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, it does not have local land use planning authority. However, Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, and light and heavy-duty trucks; and by supporting legislative efforts to increase fuel economy. It is important to note, however, that the control of the fuel economy standards is held by the EPA and the ARB. Lastly, the use of alternative fuels is also being considered; and Caltrans is participating in funding for alternative fuel research at the University of California, Davis.

Table 5.6 summarizes Caltrans' efforts and the statewide efforts that it is implementing in order to reduce GHG emissions. More detailed information about

each strategy is included in the *Climate Action Program at Caltrans* (December 2006).

The following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

1. Landscaping reduces surface warming, and through photosynthesis, decreases CO_2. Landscaping would be provided where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset any potential CO_2 emissions increase.
2. The project would recommend the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals. LED bulbs—or balls, in the stoplight vernacular—cost $60 to $70 apiece but last 5 to 6 years, compared to the average 1-year lifespan of the incandescent bulbs previously used. The LED bulbs themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO_2 emissions.
3. According to Caltrans Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction. In addition, the contractor must comply with Title 13, California Code of Regulations (CCR) Section 2449(d)(3) that was adopted by the ARB on June 15, 2008. This regulation restricts idling of construction vehicles to no longer than 5 consecutive minutes. Compliance with this regulation reduces harmful emissions from diesel-powered construction vehicles.

5.7.4 Adaption Strategies

"Adaptation strategies" refer to how Caltrans and other transportation agencies can plan for the effects of climate change on the State's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat, increasing storm damage from flooding and erosion, and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

Table 5.6 Climate Change/CO_2 Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and Regional Agencies and other Stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & ITS Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.007	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental Effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, Cal/EPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5% limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal/EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
TOTAL					**2.72**	**18.18**

Source: California Department of Transportation Standard Environmental Reference, EIR/EIS Annotated Outline (August 2013).

ARB = California Air Resources Board
BT&H = Business, Transportation and Housing Agency
Cal/EPA = California Environmental Protection Agency
Caltrans = California Department of Transportation
CEC = California Energy Commission
CO_2 = carbon dioxide
GHG = greenhouse gases
ITS = Intelligent Transportation System
MMT = million metric tons
MPOs = Metropolitan Planning Organizations

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanographic and Atmospheric Administration, released its interagency report October 14, 2010, outlining recommendations to President Obama regarding how federal agency policies and programs can better prepare the United States to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the federal government implement actions to expand and strengthen the nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaption must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed EO S-13-08, which directed a number of State agencies to address California's vulnerability to sea level rise caused by climate change. This Executive Order set in motion several agencies and actions to address the concern of sea level rise.

The California Natural Resources Agency was directed to coordinate with local, regional, State, and federal public and private entities to develop the *California Climate Adaptation Strategy* (December 2009), which summarizes the best known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across State agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08 that specifically asked the California Natural Resources Agency to identify how State agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other State agencies were involved in the creation of the Adaptation Strategy document, including Environmental Protection; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continue to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

The California Natural Resources Agency was also directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010 to advise California on planning for future sea level rise. The report was to include the following projections:

- Relative sea level rise projections for California, Oregon, and Washington, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surges, and land subsidence rates;
- The range of uncertainty in selected sea level rise projections;
- A synthesis of existing information on projected sea level rise impacts to State infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems; and
- A discussion of future research needs regarding sea level rise.

In 2010, interim guidance was released by the Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans, as a method to initiate action and discussion of potential risks to the State's infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academies Study.

All State agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surges, and storm wave data.

All projects that have filed a Notice of Preparation, and/or are programmed for construction funding through 2013, or are routine maintenance projects as of the date of EO S-13-08 may, but are not required to, consider these planning guidelines.

Furthermore, EO S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess the vulnerability of transportation systems to sea level affecting safety, maintenance, and operational improvements of the system, and the economy of the State. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of a rise in sea level.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative

sea level rise and additional climate change impacts, Caltrans has not been able to determine what changes, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment, which was released on June 22, 2012.

While estimates vary, sea levels are expected to rise an additional 22–35 inches by the year 2100. Although these projections are on a global scale, the rate of sea level rise along California's coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California's coast. As the Proposed Project site is located approximately 365 ft above sea level, the area of the project would not be affected by an approximately 35-inch rise in sea level.

5.8 Conformity Analysis

Conformity determinations require the analysis of direct and indirect emissions associated with the Proposed Project and their comparison to the without project condition. If the total of direct and indirect emissions from the project reaches or exceeds the regionally significant thresholds, the Lead Agency must perform a conformity determination to demonstrate the positive conformity of the federal action.

The project is in the 2012 Regional Transportation Plan (RTP), which was found to be conforming by the FHWA/Federal Transit Administration (FTA) on June 4, 2012. The project is also in the 2015 Federal Transportation Improvement Program (FTIP), which was found to be conforming by the FHWA/FTA on December 15, 2014 (Project ID: ORA111207; Description: HOV/HOT Connector: NB SR-241 to EB SR-91, WB SR-91 to SB SR-241 (1 Lane each dir). The Build Alternative is consistent with the scope of design concept of the FTIP. Therefore, the Proposed Project is in conformance with the State Implementation Plan (SIP). The project will also comply with all SCAQMD requirements. The 2012 RTP and 2015 FTIP listings are included in Appendix C.

5.9 Cumulative Impacts Relating to Air Quality

Cumulative projects include local development as well as general growth within the Project Area. However, as with most development, the greatest source of emissions is from vehicular traffic that can travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and, when wind patterns are considered, would cover an even larger area. Accordingly, the cumulative analysis for a project's air quality analysis must be regional by nature.

Construction and operation of cumulative projects would further degrade the local air quality, as well as the air quality of the Basin. Air quality would be temporarily degraded during construction activities that occur separately or simultaneously.

However, the greatest potential for a cumulative impact on the regional air quality would be the incremental addition of pollutants from increased traffic from residential, commercial, and industrial development and the use of heavy equipment and trucks associated with construction of these projects. The Proposed Project is a transportation improvement and not a direct trip generator.

With respect to operational emissions that may contribute to exceeding State and federal standards, a CO and $PM_{2.5}$/PM_{10} screening analysis was performed. The results of this analysis illustrate that localized levels would not violate air quality standards and, therefore, do not present an adverse cumulative impact. In addition, due to the Proposed Project's relatively small scale, the contribution to the Basin air emissions is not cumulatively considerable.

Chapter 6 Minimization Measures

The following measures will be implemented during construction activities.

AQ-1 During clearing, grading, earthmoving, or excavation operations, excessive fugitive dust emissions will be controlled by regular watering or other dust preventive measures using the following procedures, as specified in the South Coast Air Quality Management District (SCAQMD) Rule 403. All material excavated or graded will be sufficiently watered to prevent excessive amounts of dust. Watering will occur at least twice daily with complete coverage, preferably in the late morning and after work is done for the day. All material transported on site or off site will be either sufficiently watered or securely covered to prevent excessive amounts of dust. The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized so as to prevent excessive amounts of dust. These control techniques will be indicated in project specifications. Visible dust beyond the property line emanating from the project will be prevented to the maximum extent feasible.

AQ-2 Project grading plans will show the duration of construction. Ozone precursor emissions from construction equipment vehicles will be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications.

AQ-3 All trucks that are to haul excavated or graded material on site will comply with State Vehicle Code Section 23114, with special attention to Sections 23114(b)(F), (e)(2), and (e)(4), as amended, regarding the prevention of such material spilling onto public streets and roads.

AQ-4 The contractor will adhere to the California Department of Transportation (Caltrans) Standard Specifications for Construction (Sections 14.9-02 and 14-9.03).

AQ-5 All construction vehicles both on- and off-site shall be prohibited from idling in excess of 10 minutes.

This page intentionally left blank

Chapter 7 References

California Air Resources Board, Area Designations. Website: http://www.arb.ca.gov/desig/adm/adm.htm (accessed April 2015).

———. Air Quality Data (2012-2014). Website: http://www.epa.gov/airdata/ad_maps.html (accessed June 1, 2015).

———. Ambient Air Quality Standards, June 4, 2013. Website: www.arb.ca.gov/research/aaqs/aaqs2.pdf (accessed May 29, 2015).

California Department of Transportation, *Climate Action Program*. Website: www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf (accessed December 2013).

———. Standard Environmental Reference, EIR/EIS Annotated Outline, August 2013.

———. Transportation Project-Level Carbon Monoxide Protocol.

California Natural Resources Agency. *California Climate Adaptation Strategy* (December 2009).

CH2MHill, *Traffic Analysis Report*. June 2015.

Council on Environmental Quality. October 5, 2009. *Federal Leadership in Environmental, Energy and Economic Performance - Executive Order 13514.*

Federal Highway Administration, *Interim Guidelines on Air Toxic Analysis in NEPA Documents,* December 2012.

———. December 2012. *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA*.

Federal Register. Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Volume 72, No. 37, page 8430, February 26, 2007.

Institute of Transportation Studies, University of California, Davis. *Transportation Project-Level Carbon Monoxide Protocol*, December 1997.

National Academy of Sciences. June 22, 2012. *California Sea Level Projected to Rise at Higher Rate Than Global Average; Slower Rate for Oregon, Washington, But Major Earthquake Could Cause Sudden Rise.*

Southern California Association of Governments, *2012 Regional Transportation Plan/Sustainable Communities Strategy.*

South Coast Air Quality Management District, *Air Quality Management Plan, South Coast Air Basin,* 2003, 2007, and 2012.

———. *CEQA Air Quality Handbook*, 1993.

Transportation Research Board. *Traffic Congestion and Greenhouse Gases*: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May–June 2010). Website: http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf.

United States Environmental Protection Agency, Air Quality Data (2012-2014). Website: http://www.epa.gov/airdata/ad_maps.html (accessed June 1, 2015).

———. *Transportation Conformity Guidance (Final Rule)*, March 10, 2006.

United States Supreme Court decision in Massachusetts vs. EPA (2007).

Western Regional Climatic Center. Website: http://www.wrcc.dri.edu (accessed April 10, 2015).

White House Council on Environmental Quality. October 5, 2010. *Progress Report of the Interagency Climate Change Adaptation Task Force: Recommended Actions in Support of a National Climate Change Adaptation Strategy.*

Appendix A Construction Emission Calculations

Contents: Road Construction Emission Model Printouts

This page intentionally left blank

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> SR-241/SR-91 Express Lanes Connector Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	7.2	35.0	37.1	17.2	2.2	15.0	5.1	2.0	3.1	5,365.6
Grading/Excavation	13.4	66.5	107.9	20.5	5.5	15.0	8.2	5.0	3.1	12,439.8
Drainage/Utilities/Sub-Grade	11.2	57.1	80.3	19.4	4.4	15.0	7.2	4.1	3.1	9,726.6
Paving	7.1	37.8	41.0	2.6	2.6	-	2.3	2.3	-	5,646.0
Maximum (pounds/day)	13.4	66.5	107.9	20.5	5.5	15.0	8.2	5.0	3.1	12,439.8
Total (tons/construction project)	2.2	11.1	16.3	3.4	0.9	2.5	1.3	0.8	0.5	1,960.1

Notes:

Project Start Year ->	2017
Project Length (months) ->	18
Total Project Area (acres) ->	72
Maximum Area Disturbed/Day (acres) ->	2
Total Soil Imported/Exported (yd^3/day)->	100

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> SR-241/SR-91 Express Lanes Connector Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	3.3	15.9	16.8	7.8	1.0	6.8	2.3	0.9	1.4	2,438.9
Grading/Excavation	6.1	30.2	49.0	9.3	2.5	6.8	3.7	2.3	1.4	5,654.5
Drainage/Utilities/Sub-Grade	5.1	26.0	36.5	8.8	2.0	6.8	3.3	1.8	1.4	4,421.2
Paving	3.2	17.2	18.6	1.2	1.2	-	1.1	1.1	-	2,566.4
Maximum (kilograms/day)	6.1	30.2	49.0	9.3	2.5	6.8	3.7	2.3	1.4	5,654.5
Total (megagrams/construction project)	2.0	10.1	14.8	3.1	0.8	2.3	1.2	0.7	0.5	1,777.8

Notes:

Project Start Year ->	2017
Project Length (months) ->	18
Total Project Area (hectares) ->	29
Maximum Area Disturbed/Day (hectares) ->	1
Total Soil Imported/Exported (meters^3/day)->	76

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

This page intentionally left blank

Appendix B CO Protocol

Contents: Highlighted CO Protocol Flowcharts

This page intentionally left blank

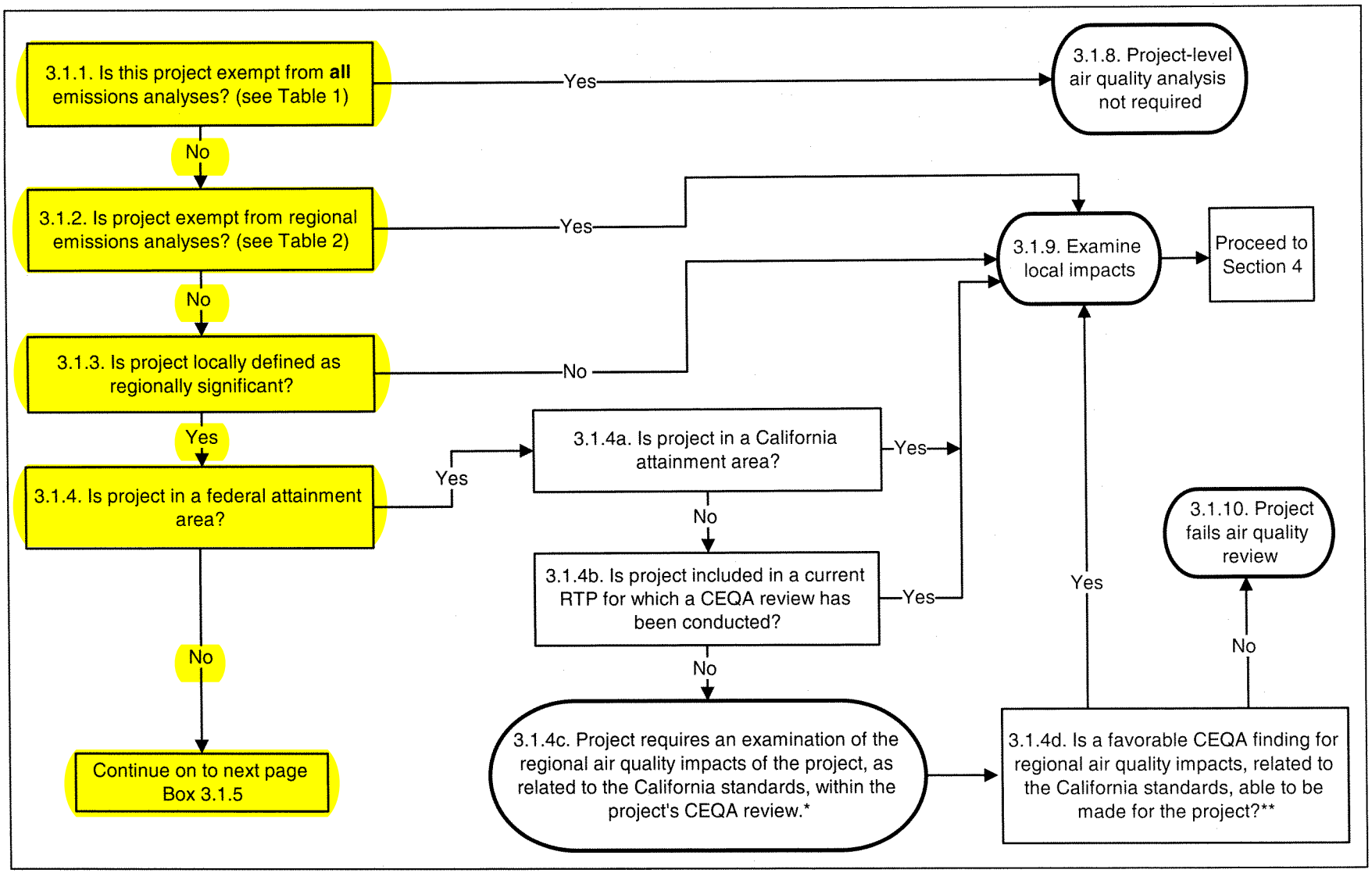


Figure 1. Requirements for New Projects

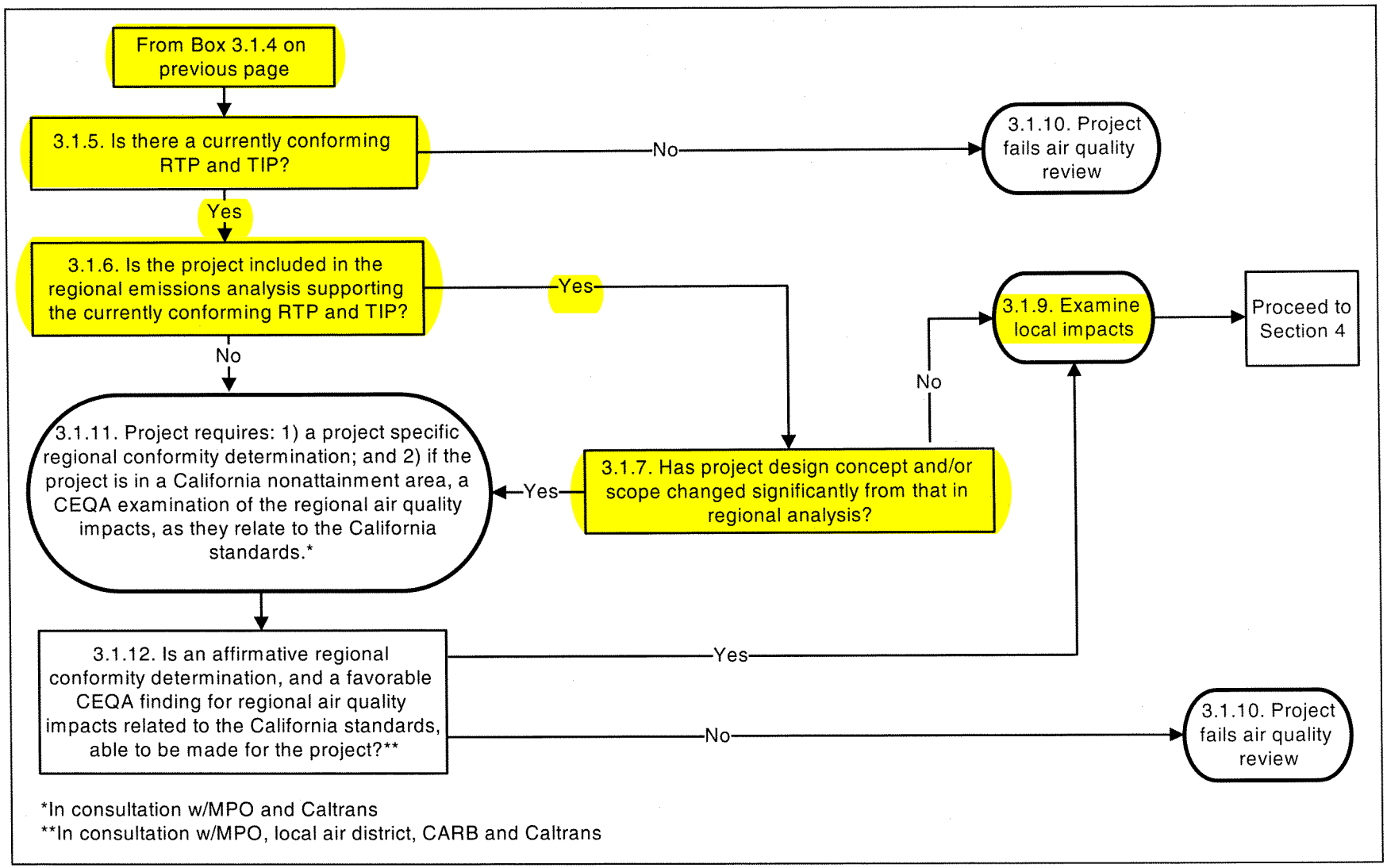


Figure 1 (cont.). Requirements for New Projects

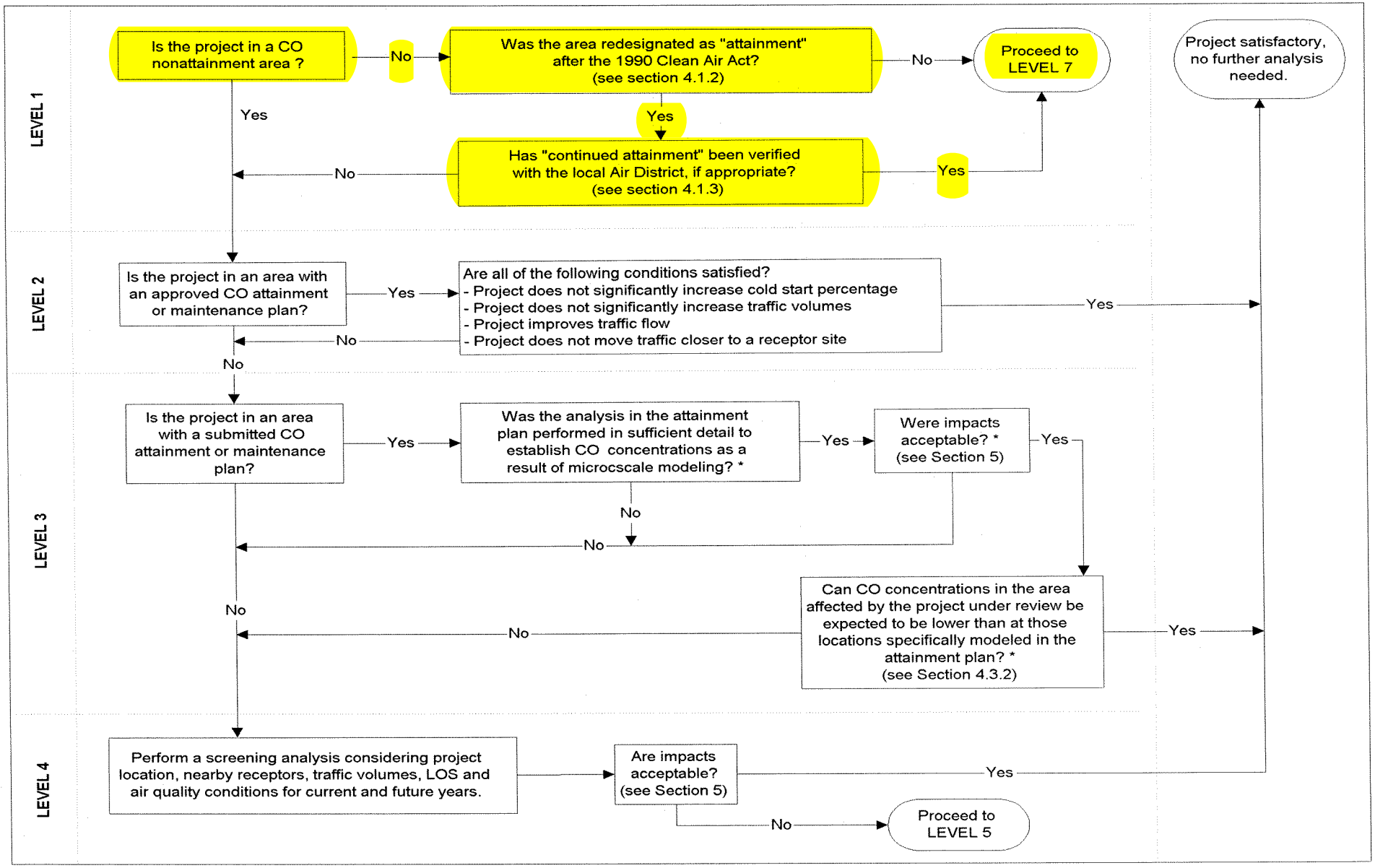


Figure 3. Local CO Analysis

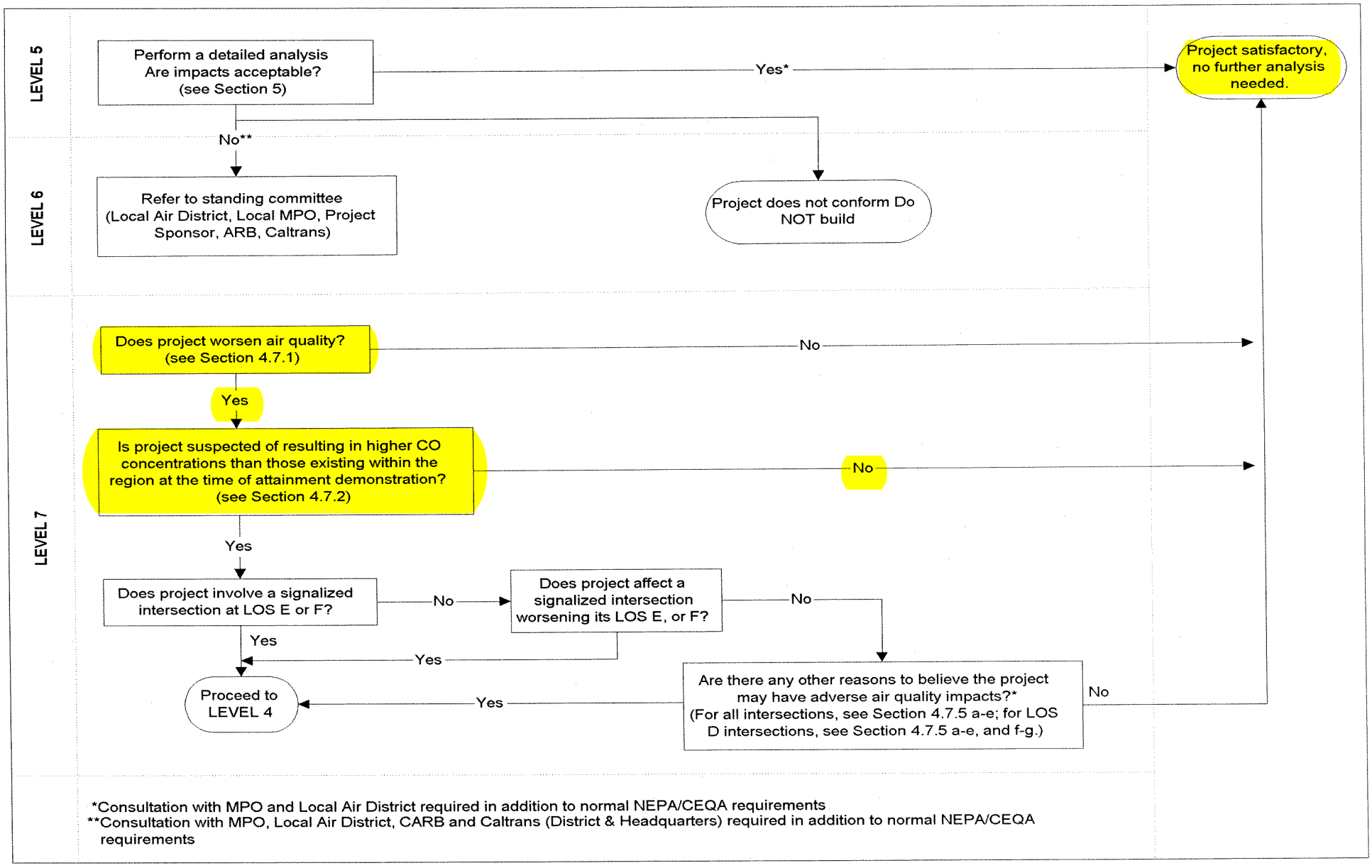


Figure 3 (cont.). Local CO Analysis

Appendix C 2012 RTP and 2015 FTIP Project Listings

Contents: 2012 Regional Transportation Plan Project Listing
2015 Federal Transportation Improvement Program Project Listing

This page intentionally left blank

FTIP Projects					
County	System	FTIP ID	Route	Description	Project Cost ($1,000's)
ORANGE	STATE HIGHWAY	ORA120320	57	SR-57/LAMBERT RD INTERCHANGE IMPROVEMENTS – RECONFIG EXISTING DIAMOND INTERCHANGE TO LOOP RAMP, ADD SB LN ON OFFRAMP	$38,150
ORANGE	STATE HIGHWAY	10254	73	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/5/01	$351,111
ORANGE	STATE HIGHWAY	ORA000152	74	ORTEGA HWY (RANCHO VIEJO RD TO JUST EAST OF I-5/SR-74 INTERCHAGE) RDWAY WIDEN ADD RT TRN LNE TO CAPAC & REDUCE QUE ON WB SR-74 TO NB I-5 TRN. N/B FRM 2T03 & S/B 2T03 .	$2,550
ORANGE	STATE HIGHWAY	ORA120507	74	WIDEN ORTEGA HIGHWAY FROM COUNTY/CITY OF SAN JUAN CAPISTRANO TO APPROXIMATELY 1,900 FEET EAST OF THE INTERSECTION OF THE LA PATA/ORTEGA HIGHWAY INTERSECTION (APPROXIMATELY 1.2 MILES). WIDEN FROM 2 TO 4. INCLUDING WIDENING OF THE BRIDGE OVER SAN JUAN CREEK.	$42,694
ORANGE	STATE HIGHWAY	ORA120506	74	WIDEN ROUTE 74 FROM 2 TO 4 LANES – COUNTY SEGMENT (ON ROUTE 74 FROM CITY/COUNTY LINE TO ANTONIO PARKWAY / LA PATA AVE. WIDEN FROM 2 LANES TO 4 LANES) PPNO 4110A EA 08691 SPLIT FROM ORA120507	$40,905
ORANGE	STATE HIGHWAY	ORA000115	90	IMPERIAL HWY SMART ST (LAC TO HARBOR) RESTRIPE 4 TO 6 LNS (LAC LINE TO IDAHO ST. ADD RAISED MEDIAN. MODFY MEDIANS AT 4 INTSECS. ADD BUS PADS, TURNOUTS.(COMBINES ORA028 AND ORA029)	$16,244
ORANGE	STATE HIGHWAY	ORA020808	90	IN ORANGE COUNTY, ON RTE 90 IMPERIAL HIGHWAY, IN THE CITIES OF YORBA LINDA AND ANAHEIM ON ROUTE 90 FROM EAST OF KELLOGG DRIVE UNDERCROSSING TO LA PALMA AVENUE. THE PROJECT IS TO PROVIDE ENHANCEMENT AND MITIGATION PLANTING. PPNO 4434B EA 12-056221	$1,669
ORANGE	STATE HIGHWAY	ORA000822	91	CONNECT EXISTING AUXILIARY LANE THROUGH INTERCHANGES ON WB SR-91 BETWEEN SR-57 AND I-5 WITH ITS ELEMENTS PPNO 4516A EA 0C5700	$73,400
ORANGE	STATE HIGHWAY	ORA110502	91	EASTBOUND RTE 91 FROM RTE 91/55 CONNECTOR TO EAST OF WEIR CANYON ROAD INTERCHANGE; WESTBOUND RTE 91 FROM EAST OF WEIR CANYON RD INTERCHANGE TO IMPERIAL HWY INTERCHANGE. WIDENING. REPLACEMENT PLANTING/LANDSCAPING. SPLIT FROM ORA030601	$2,498
ORANGE	STATE HIGHWAY	ORA111207	91	HOV/HOT CONNECTOR: NB SR-241 TO EB SR-91, WB SR-91 TO SB SR-241 (1 LANE EACH DIR)	$3,000
ORANGE	STATE HIGHWAY	ORA020807	91	IN ORANGE COUNTY, AT THE COAL CANYON ROAD INTERCHANGE. THE PROJECT IS TO INSTALL VEGETATION ENHANCEMENTS	$802
ORANGE	STATE HIGHWAY	ORA120336	91	SR-91 EASTBOUND LANE ADDITION BETWEEN SR-241 & SR-71, & IMPROVE NB SR-71 CONNECTOR FROM SR-91 TO STD ONE LANE AND SHOULDER WIDTH. 0G0400	$77,575
ORANGE	STATE HIGHWAY	ORA000821	91	SR-91 WB (SR-55 THROUGH TUSTIN INTERCHANGE) EXTEND LANE AND RECONSTRUCT AUX. LANE. PPNO 4587A EA 0C560)	$41,930
ORANGE	STATE HIGHWAY	ORA030601	91	SR-91: ADD 1 MF LANE E/B BTWN 91/55 CONNECTOR & SR-241 – W/B BTWN SR-241 & IMPERIAL HWY; MODIFY W/B ON RAMPS FROM LAKEVIEW AVE TO IMPRV MERGE (ADD AUX LANE BETWEEN NB 55 – TO – EB 91 ON-RAMP AND LAKEVIEW OFF RAMP). PROJECT SPLIT LANDSCAPING	$85,986
ORANGE	STATE HIGHWAY	ORA990911	142	IN ORANGE COUNTY, ON RTE. 142, TO PROVIDE NATIVE LANDSCAPING.	$525
ORANGE	STATE HIGHWAY	ORA051	241	(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2020 PER SCAG/TCA MOU 4/05/01.	$143,517
ORANGE	STATE HIGHWAY	ORA052	241	(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2013; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01. #1988	$1,509,133

Final 2015 Federal Transportation Improvement Program

Orange County Project Listing
State Highway
(In $000`s)

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
ORA000820	Orange	SCAB		2TK01116	CAX63	57	21.2	.68	S	NON-EXEMPT	0
Description:							PTC	124,600	Agency	CALTRANS	

SR-57 TRUCK CLIMBING AUX LANE FROM LAMBERT TO LA CO. LINE PPNO 3847A EA 0C120 (PE ONLY)

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
AGENCY	5,800			5,800				5,800				5,800
ORA000820 Total	5,800			5,800				5,800				5,800

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
10254	Orange	SCAB		10254	CAN69	73	9.6	25.45	S	TCM Committed	0
Description:							PTC	351,188	Agency	TCA	

SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/5/01

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
PRIVATE FUNDS	4,290		346,898	351,188	24,188	900	8,100		31,800	143,100	143,100	351,188
10254 Total	4,290		346,898	351,188	24,188	900	8,100		31,800	143,100	143,100	351,188

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
ORA052	Orange	SCAB		ORA052	CAN69	241	.01	15.9	S	TCM Committed	0
Description:							PTC	1,331,269	Agency	TCA	

(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2021; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01. #1988

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
DEMO-SAFETEA-LU			7,119	7,119	7,119							7,119
PRIVATE FUNDS	144,254	98,682	820,802	1,063,738	302,294	97,364	90,245	97,164	43,869	216,401	216,401	1,063,738
ORA052 Total	144,254	98,682	827,921	1,070,857	309,413	97,364	90,245	97,164	43,869	216,401	216,401	1,070,857

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
ORA051	Orange	SCAB		ORA051	CAN69	241	13.8	26.5	S	TCM	0
Description:							PTC	269,045	Agency	TCA	

(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2020 PER SCAG/TCA MOU 4/05/01.

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
PRIVATE FUNDS	4,453		264,592	269,045	117,377				50,556	50,556	50,556	269,045
ORA051 Total	4,453		264,592	269,045	117,377				50,556	50,556	50,556	269,045

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
ORA111207	Orange	SCAB		2T01135	CAXT7	241	36	39.5	S	TCM	0
Description:							PTC	183,557	Agency	TCA	

HOV/HOT CONNECTOR: NB SR-241 TO EB SR-91, WB SR-91 TO SB SR-241 (1 LANE EACH DIR) AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01. Parent project ORA050

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
PRIVATE FUNDS	3,557		180,000	183,557	3,557				60,000	60,000	60,000	183,557
ORA111207 Total	3,557		180,000	183,557	3,557				60,000	60,000	60,000	183,557

Appendix D TCWG Findings

Contents: Transportation Conformity Working Group Project Determination

This page intentionally left blank

PM Hot Spot Analysis Project Lists

Review of PM Hot Spot Interagency Review Forms

April, 2015	Determination
I605LiveOakOffRamp April 2015	Not a POAQC - Hot Spot Analysis Not Required
LA0G086 April 2015 Tracked LA0G086 April 2015	Reaffirmed not a POAQC - Hot Spot Analysis Not Required
ORA111207Memo April 2015	Reaffirmed not a POAQC - Hot Spot Analysis Not Required
RIV121202 April 2015	Not a POAQC - Hot Spot Analysis Not Required
2002160Interchange April 2015	Not a POAQC - Hot Spot Analysis Not Required
2002160Widening April 2015	Not a POAQC - Hot Spot Analysis Not Required

This page intentionally left blank

Appendix E Experience and Preparers

Contents: Resume of Keith Lay

This page intentionally left blank

KEITH LAY
ASSOCIATE

EXPERTISE
Noise and Air Quality Analysis

EDUCATION
University of Manitoba, B.S., Civil Engineering (Transportation and Environmental Engineering emphasis), 1998.

CERTIFICATIONS
Caltrans On-Line Training Course

FHWA Transportation Conformity (January 2015)

PROFESSIONAL ORGANIZATIONS
Women's Transportation Seminar

PROFESSIONAL RESPONSIBILITIES
Mr. Lay, an Associate and Air Quality/Noise Specialist with LSA, has over 15 years of experience in environmental studies, specializing in noise and air quality impact analysis. Since joining LSA in 2000, Mr. Lay has conducted air quality and noise studies for a variety of commercial, residential, industrial, and transportation projects, in accordance with procedures specified in State and local protocols and guidelines. In addition, Mr. Lay has prepared global warming/climate change analyses in response to recent changes to State laws. He has specific expertise in the use of the California Line Source Dispersion Model (CALINE4), the California Emission Factor Model (EMFAC), and the Traffic Noise Model (TNM).

PROJECT EXPERIENCE
I-5 HOV/Truck Lanes Project
Santa Clarita, California
Mr. Lay prepared an air quality analysis for the Interstate 5(I-5) High-Occupancy Vehicle (HOV)/Truck Lanes Project. The project segment of I-5 crosses the City of Santa Clarita, the unincorporated community of Castaic, and other parts of unincorporated northern Los Angeles County. The analysis consisted of evaluating two Build Alternatives to extend the HOV lanes on I-5 from the State Route 14 (SR-14) interchange to just south of the Parker Road/I-5 interchange, incorporating truck climbing lanes from the SR-14 interchange to Pico Canyon Road/Lyons Avenue, and constructing and/or extending auxiliary lanes between intersections at six locations.

State Route 60 (SR-60)/Lemon Avenue Interchange Project
Diamond Bar, California
Mr. Lay prepared air quality analysis for the State Route 60 (SR-60)/ Lemon Avenue Interchange Project in the City of Diamond Bar. The analysis consisted of evaluating three Build Alternatives to construct a new interchange on SR-60 at Lemon Avenue.

I-5 Widening (SR-91 to I-605) Environmental Impact Report/ Environmental Impact Statement
Orange County, California
Mr. Lay assisted in the preparation of the air quality analysis for the I-5 Corridor Improvement Project (State Route 91 [SR-91] to Interstate 605 [I-605]). The purpose of this analysis was to evaluate the potential short-term construction and long-term operation impacts associated with widening I-5 from 6 lanes to 10 or 12 lanes.

SR-91 Eastbound Lane Addition Project
Orange and Riverside Counties, California
LSA worked with the Orange County Transportation Authority (OCTA) and Caltrans to add an additional lane to eastbound SR-91

PROFESSIONAL EXPERIENCE

Associate, LSA Associates, Inc., Irvine, California, February 2003–Present.

Assistant Engineer, LSA Associates, Inc., May 2000–February 2003.

Technical Officer, National Research Council of Canada, 1999–2000.

Intern, National Research Council of Canada, 1998–1999.

Technical Officer, Manitoba Government Services, 1997.

PROJECT EXPERIENCE (CONTINUED)

between State Route 241 (SR-241) and State Route 71 (SR-71). Mr. Lay assisted in updating the air quality analysis and preparing the air quality section of the environmental document.

Cherry Avenue/I-10 Interchange
Fontana, California
Mr. Lay conducted air quality and noise impact analyses as part of the necessary environmental compliance documents for the improvements to the Cherry Avenue/Interstate 10 (I-10) interchange project. This project is a cooperative study to evaluate alternatives for widening the Cherry Avenue/I-10 overcrossing and modifying the ramp connections.

Citrus Avenue/I-10 Interchange
Fontana, California
Mr. Lay conducted air quality and noise impact analyses as part of the environmental services for improvements to the Citrus Avenue/I-10 Interchange project in the City of Fontana. Improvements will consist of widening the Citrus Avenue overcrossing to three through lanes in each direction with two left-turn lanes to the I-10 on-ramps.

I-10 Median Widening
Redlands, California
Mr. Lay assisted in preparing the air quality and noise impact analyses for the I-10 widening project in the City of Redlands. Improvements will consist of widening the freeway from six to eight lanes by adding one mixed-flow lane in the median in each direction.

I-215 Widening/Reconstruction Segment 1
San Bernardino, California
Mr. Lay conducted a noise impact analysis for the proposed highway widening and reconstruction of Interstate 215 (I-215) in the City of San Bernardino. The purpose of the project is to improve the existing conditions by upgrading I-215 to current design standards by providing increased weaving distances, eliminating the existing "left-on" and "left-off" ramps, and increasing the capacity of I-215 through the use of HOV lanes in both northbound and southbound directions.

Community and Environmental Transportation Acceptability Process (CETAP) Riverside/Orange County Corridor
Riverside, California
The technical studies were prepared in support of the overall environmental impact analyses for the comparison of alternative routes to be evaluated with the objective of preserving rights-of-way for two major transportation corridors in western Riverside County, California. Mr. Lay assisted in the preparation of the air quality and noise impact analyses.